Cancer Among American Indian Residents of Montana 2002 - 2006

A Special Report of the
Montana Central Tumor Registry

August, 2008

MONTANA
CANCER PREVENTION & CONTROL
CENTRAL TUMOR REGISTRY

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Table of Contents

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EXECUTIVE SUMMARY

The Montana Central Tumor Registry (MCTR) contains comprehensive data on the diagnosis, treatment, and outcome of reportable tumors in Montana. It has been collecting data continuously since 1979. These data are the primary source of information about cancer in Montana. In 1995, the MCTR began a cooperative agreement with the Centers for Disease Control and Prevention (CDC) under the National Program of Cancer Registries (NPCR) to begin enhancement of the registry. The enhancements were to improve data collection, data quality, and data use.

Fifty-five hospitals, five cancer centers accredited by the American College of Surgeons, one Veterans Administration Hospital, four independent pathology laboratories, and 26 out-of-state central cancer registries report to the MCTR. The MCTR documents approximately 5,000 new cancer cases a year statewide, including approximately 175 cases among American Indians. Since 1990, reporting has been more than 95 percent complete statewide.

This special report presents a synthesis of cancer incidence and mortality for American Indians residents of Montana, compared to White residents, for cancers diagnosed in 2002 through 2006. Cancer was the second leading cause of death among all Montana residents during 2004-2006, accounting for 23% of deaths. Cardiovascular disease (heart disease and stroke) was the leading cause of death, accounting for 27% of deaths. Among American Indians, cancer accounted for 21% of all deaths and cardiovascular disease accounted for 24%. Among Whites, cancer accounted for 24% and cardiovascular disease accounted for 21%.

The four most common kinds of cancer reported among American Indian in Montana between 2002 and 2006 were lung and bronchus (20.0%), breast (female) (12.2%), prostate (11.2%), and colon and rectum (11.2%), jointly accounting for 55% of all cancers diagnosed among American Indians. The most common kinds for White residents were prostate (17.5%), lung and bronchus (13.9%), breast (female) (13.6%), and colon and rectum (9.9%), also accounting for 55% of all cancers. Twenty kinds of invasive cancer accounted for 90% of diagnosed cases in both American Indian and White residents. The remaining kinds of cancer individually accounted for less than 1% of diagnosed cases. On the whole, the same 20 cancers appeared on both lists, in slightly different order, with minor exceptions.

This report provides summaries for 20 kinds of cancer, accounting for 90% of incident cases in American Indians in Montana between 2002 and 2006. The summaries include age-adjusted incidence and mortality rates by sex and comparisons with White residents of Montana. For the four most common cancers, the summaries include stage at diagnosis and survival compared with White residents of Montana. Small numbers of cases among American Indians prevent detailed analysis of other kinds of cancer. A complete tabulation of cancer cases diagnosed from 2002 through 2006 for all invasive cancers is presented in Appendix IV.

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INTRODUCTION

Cancer is a general term for cells that grow out of control, no longer perform their usual functions, and invade other parts of the body. Cancer as a category of disease is common: one in three residents of the Untied States will develop cancer in his or her lifetime. Cancers are classified by site (part of the body) and histology (kind of cells affected and the way the cells behave). Each kind of cancer, as defined by site and histology, has its own risk factors. Many kinds of cancer are uncommon and some are rare. The Montana Central Tumor Registry collects data on all cancer patients who are residents of Montana or residents of other states who are diagnosed or treated for cancer in Montana.

REGISTRY OVERVIEW

Purpose of the Montana Central Tumor Registry

The Montana Central Tumor Registry (MCTR) is a central state registry of all cancers diagnosed or treated in Montana. The MCTR uses a computer data system designed for the collection, storage, management, and analysis of the data collected and maintained. The primary objective of the MCTR is to analyze the incidence, mortality, survival, and the changing frequency of cancer in Montana residents.

Follow-up is conducted yearly on patients registered in the MCTR and is a necessary part of adequate care for cancer patients. It also provides valuable data for cancer end-results research. Meaningful end-results reporting can only be accomplished when a follow-up program is highly successful. A central registry allows a hospital and its physicians to compare their cancer patients' outcomes with outcomes experienced elsewhere in the state.

History of the Montana Central Tumor Registry

The MCTR has had a long but sporadic history. A number of Montana physicians, medical record personnel, and other organizations have contributed to the database that exists today. The MCTR took its current form in 1979, when the Montana Legislature approved funding for the Montana Central Tumor Registry for two years. It was placed under the direction of the Department of Health and Environmental Sciences (DHES). Initially, 46 hospitals that were willing to contribute their cancer data in order to provide uniform statewide cancer reporting. Based largely on the favorable experience reported to it, the 1981 Montana Legislature continued funding the MCTR and made cancer a reportable disease, requiring all hospitals in the state to report their cancer cases. The 1983 Montana Legislature approved House Bill 113, which provided for cancer reporting by independent clinical laboratories in addition to hospitals. This was important in helping the MCTR obtain more complete, reliable statistics and in furthering the objective of a valid population-based cancer registry for the state.

The 1997 Montana Legislature approved House Bill 370, which provided for cancer reporting from physicians or other health care practitioners who diagnose and/or treat patients without referring them to a hospital. The purpose of this addition to the law was to obtain even more complete cancer reporting. Currently (in 2008), physicians provide diagnostic and treatment information on cases queried by the MCTR but are not yet reporting independently to the MCTR.

Data Collection

The MCTR collects data on all cancer patients who are residents of Montana or residents of other states who are diagnosed or treated for cancer in Montana. The MCTR has interstate exchange agreements with 26 other states where Montana residents may go for diagnosis or treatment of cancer. Residents of other states are not included in this report. As of December 2006, there were over 125,000 cases registered on the MCTR.

Definitions

Tumor	any abnormal growth of cells; may be benign (noncancerous) or malignant (cancerous)
Neoplasm	same as tumor
Malignant	tumors that spread to nearby organs or other parts of the body; cancerous tumors
Benign	tumors that do not spread to other parts of the body; noncancerous tumors

Reportable Cancer Cases

According to the Administrative Rules of Montana (16.32.501), the following tumors are to be submitted for reporting. Hospitals are required to submit reportable cancer cases to the MCTR within six months after the patient's discharge date. The list is based on cases that are categorized as malignant or in-situ by the *International Classification of Diseases for Oncology*, Third Edition (ICD-O-3):

A. All malignant neoplasms (including in-situ)
EXCEPTION: Basal Cell Carcinoma or Squamous Cell Carcinoma of the skin.

NOTE: BCC and SCC of the labia, vagina, vulva, clitoris, penis, scrotum, prepuce, and anus must be included. Carcinoma in-situ of the cervix (CIS), intraepithelial neoplasia grade III (8077/2) of the cervix (CIN III), prostate (PIN III), vulva (VIN III), vagina (VAIN III), and anus (AIN III) are required by the MCTR because of their in-situ classification.

B. All benign tumors of the brain
INCLUDES: meninges, brain, spinal cord, cranial nerves and other parts of the CNS, pituitary gland, craniopharyngeal duct, and pineal gland

C. All carcinoid tumors (malignant, benign, and Not Otherwise Specified)

D. Ambiguous Terms
Terms that constitute diagnoses that are not histologically confirmed

Reportable
Apparent
Compatible with
Consistent with
Most likely
Probable
Suspect
Suspicious

Confidentiality of Cancer Information

Confidentiality of all medical records data is of vital importance. All data about cancer patients are held in strict confidence by the MCTR. Confidentiality is an issue of increasing concern to cancer registries. The policy of the MCTR prohibits release of any patient-identifying information to third parties. Data are released only in statistically summarized (aggregated) form so that individual patients, hospitals, or physicians cannot be identified. Furthermore, statistically summarized information is released only to individuals or organizations that are qualified to perform and interpret data analyses and who employ safeguards against any unauthorized disclosure.

Quality Assurance of Data Collected

Accuracy and consistency are essential in tumor registry reporting. The MCTR performs quality control review on all abstracts and follow-up reports received. Procedures for review include visual review, computerized data edits, and hospital or physician queries.

The MCTR performs quality assurance tasks upon receipt of abstracts from each reporting institution. Periodic review procedures also include re-abstracting of cases and case-finding studies. The reporting facility is required to resolve incomplete, incorrect, or inconsistent data upon MCTR query.

Activities of the Montana Central Tumor Registry

1. Provide centralized cancer surveillance in Montana.
   a. Receive reports of cancer cases and incorporate the information into a statewide electronic database composed of cancer incidence, treatment, follow-up, and mortality data on Montana residents and non-residents diagnosed and/or treated in Montana.
   b. Monitor cancer reporting by applying quality assurance/control standards to all data.

c. Provide data on a county, state, or national level.
d. Maintain and ensure the security of the cancer database.
e. Document and provide data on cancer occurrence, distribution, and treatment in Montana. Document any unusual patterns of cancer cases in a community either in incidence, changing patterns, or results of treatment over time. Monitor cancer incidence in possible association with known or suspected carcinogens.
f. Calculate and interpret statistics on occurrence, stage at diagnosis, treatment, and survival by primary site of the cancer and by geographic and demographic variables.

2. Assist each hospital, clinic, or physician in cancer care delivery by providing summary statistics on their own patient's treatment and survival results.

3. Facilitate annual lifetime follow-up for each cancer patient and early detection of metastatic disease, second primary cancers, and some cancer recurrences by sending yearly patient follow-up reminders to physicians.

4. Provide support and services to participating hospital cancer registries.
   a. Assist in establishing and maintaining hospital-based tumor registries. Educate professionals about cancer reporting and supply necessary forms. Conduct tumor registrar training and continuing education.
   b. Assist hospital tumor registrars in interpretation and use of MCTR registry maintenance and statistical reports.

5. Define areas for further education and research.

Reporting Completeness

Since 1995, cancer reporting has been about 95% complete in Montana. Estimated new cases are calculated using an incidence-to-mortality ratio.[1] A few hospitals have not reported completely.

[1] http://www.cdc.gov/cancer/npcr/uscs/data/00_bias_correction.htm

TECHNICAL NOTES

Stage at Diagnosis

Cancer staging is based on the size of the tumor, its extent of spread to surrounding tissue or regional lymph nodes, and the presence or absence of distant metastases. Stage at diagnosis is important because in most cases survival and quality of life after diagnosis and treatment are strongly influenced by stage at diagnosis. The MCTR data contain the stage of diagnosis coded according to the *SEER Summary Staging Manual 2000* guidelines for cases diagnosed 2002 and 2003. Cases diagnosed in 2004 and later are coded according to the *AJCC Collaborative Staging System* version 01.03.00.

In-situ	A neoplasm that fulfills all the microscopic criteria for a malignancy but does not invade or penetrate surrounding tissue. It is non-invasive.
Localized	An invasive neoplasm confined entirely to the organ of origin.
Regional	A neoplasm that has extended beyond the limits of the organ of origin directly into surrounding organs or tissues, into regional lymph nodes, or both.
Distant	A neoplasm that has spread to parts of the body remote from the primary tumor, either by direct extension or by discontinuous metastasis.
Unstaged	Information is not sufficient to assign a stage.

Incidence and Mortality Rates

Incidence rate: The incidence rate is the number of new cases diagnosed during a specified time period per 100,000 people at risk (using the summed population over the time period as the denominator). The Crude Incidence Rate is computed by dividing the actual number of cases of cancer by the actual population at risk, and multiplying by 100,000. The Age-Adjusted Incidence Rate is computed by projecting the number of cases that would be expected among 100,000 people if they had the sex and age structure of a standard or reference population. All incidence rates in this report are age-adjusted to the 2000 U.S. Standard Million Population by the direct method.[2] Incidence rates are calculated for invasive cancers only except for bladder cancer, which is calculated for invasive and in-situ cancers combined. Basal cell carcinoma and squamous cell carcinoma of the skin are excluded.

Mortality rate: The mortality rate is the number of deaths due to cancer occurring in the population during a specified time period per 100,000 people at risk (using the summed population over the time period as the denominator). The Crude Mortality Rate is computed by dividing the actual number of deaths from cancer by the actual population at risk and multiplying by 100,000. The Age-Adjusted Mortality Rate is computed by projecting the number of deaths that would be expected among 100,000 people if they had the sex and age structure of the standard population. All mortality rates in this report are age-adjusted to the 2000 U.S. Standard Million Population by the direct method.[2]

[2] Anderson RN, Rosenberg HM. 1998. Age Standardization of Death Rates: Implementation of the Year 2000 Standard. National Vital Statistics Reports, vol. 47, no. 3. Hyattsville, MD: National Center for Health Statistics.

Until 1999, cancer incidence and mortality rates in the United States were age-adjusted to the 1970 Standard Million population.[3] International studies of cancer use other standard reference populations.[4] Rates using different reference populations cannot be compared.

95% Confidence Intervals

Incidence and mortality rates based on small numbers of cases in small populations are unstable. Rates fluctuate greatly from year to year. Even using a five-year interval to compute rates does not entirely solve this problem. The uncertainty associated with the computed incidence or mortality rate is measured by a Confidence Interval around the computed rate. It is customary to use a 95% Confidence Interval, indicating that the true incidence or mortality rate lies within the interval with 95% certainty.

Comparing Cancer Rates

When comparing cancer incidence or mortality rates between racial groups or between sexes, it is necessary to look at the 95% Confidence Intervals around the estimated rates for both groups. If the Confidence Intervals overlap, the rates are not statistically different. For example, the all-sites incidence rate for American Indian males was 546.4 (95% Confidence Interval 487.5 - 605.3) and for White males it was 527.4 (517.9 - 539.9). Although 546.4 is greater than 527.4, the Confidence Intervals overlap, so these rates are not statistically different. For females, the incidence rate for American Indians was 470.4 (424.6 - 516.2) and for Whites it was 396.2 (388.4 - 404.0). The Confidence Interval for American Indian females does not overlap with the Confidence Interval for White females, so the incidence rate for American Indian females is statistically significantly greater than that for White females.

Data Limitations

Montana as a whole has a relatively small population, with a total estimated population of 902,195 in the Census 2000.[5] The number of American Indians in the Montana Census 2000 was small: 66,320 people identified themselves as American Indian alone or in combination with one or more other races.

It is difficult to compute accurate incidence and mortality rates for small segments of a population such as American Indians. Because of the small population numbers and relative rarity of some forms of cancer, the numbers of cancer cases and cancer deaths can be very low. Small numbers are particularly problematic when data are subdivided by sex, age, and race. Aggregating data over a five-year period helps to offset the instability, but does not eliminate it. Caution must be exercised when comparing incidence and mortality rates by race.

[3] Wingo PA et al. 2003. Long-term trends in cancer mortality in the United States, 1930-1998. *Cancer* 97(Suppl 12):3133-3275.
[4] http://who.int\whosis\indicators\2007MortAgeStandardized\en\index.htm
[5] http://www.ceic.mt.gov\C2000\sf32000\sf3counties\SFData\05030000.pdf

SPECIAL CONSIDERATIONS FOR ASSESSING CANCER AMONG AMERICAN INDIANS IN MONTANA

Identifying American Indian Patients in the MCTR

American Indians are often misclassified in health records systems, including tumor registries.[6] This has the effect of underestimating the burden of cancer among American Indians. A review of Montana death certificates filed between 1996 and 1998 inclusive found that 91% of American Indian decedents were consistently classified as American Indian in Indian Health Service (IHS) files and Montana death certificates, although misclassification was greater for some causes of death than others.[7] Montana is one of 45 states now collaborating with the IHS Division of Epidemiology to perform annual records linkage between state tumor registry files and IHS administrative files of enrolled recipients of IHS services from 1990 forward. Patients matched in the two systems are classified as American Indian. Lists of matched records are returned to the state tumor registries for review. Some of the matched individuals are already classified as American Indians in the tumor registries, but some are not.

The MCTR recodes the race of an average of 25 to 30 patients per year to American Indian through this process. Because the number of American Indian residents in Montana is relatively small, and the number of cases of cancer among them each year is also small, reclassifying 25 to 30 American Indian patients in the MCTR each year can have a substantial effect on American Indian cancer incidence rates.

Bridged-Race Population Estimates

Until 1997, federal data collection systems, including the Census, only allowed people to identify themselves as belonging to one race. In 1997, federal data standards were revised to allow people to identify themselves as belonging to more than one race.[8] Multiple-race response categories were incorporated into the Census 2000, which is the source of national, state, and county population estimates for the years 2000 through 2009.

The problem of how to allocate people who identified themselves as belonging to more than one race into single categories for analysis was not resolved until 2003.[9] The resolution is called the Bridged-Race Model. Bridging is a statistical method used to minimize discontinuities between two data collection systems, such as the previous single-race classification system and the current multiple-race classification system in the Census. The bridged-race estimates are created with a complex probability model

[6] Clegg LX et al. 2007. Quality of race, Hispanic ethnicity, and immigrant status in population-based cancer registry data: implications for heatlh disparity studies. *Cancer Causes Control* 18:177-187.
[7] Harwell TS et al. 2002. Accuracy of race coding on American Indian death certificates, Montana 1996-1998. *Public Health Rep* 117:44-49.
[8] Office of Management and Budget. Revisions to the standards for the classification of Federal data on race and ethnicity. Federal Register 62FR58781-58790, October 30, 1997.
[9] Ingram DD et al. 2003. United States Census 2000 population with bridged race categories. National Center for Health Statistics. Vital Health Stat series 2, number 135. Hyatsville, MD.

that computes the likelihood that each person reporting more than one race would have given a specific single-race response.

The National Center for Health Statistics produces Bridged-Race Intercensal Population Estimates every year between the decennial censuses. These estimates provide the denominators necessary to compute cancer incidence and mortality rates by race.

The bridged-race estimates resulted in an increase in the number of American Indian residents of Montana relative to the number who gave American Indian as a single-race response in the Census. Bridged-race changes have little effect on cancer incidence and mortality rates computed for White residents of Montana but more effect on rates computed for American Indians because the American Indian population of the state is relatively small compared to the White population (6% compared to 93%; the remaining 1% are individuals of all other races).[10]

[10] http://www.ceic.mt.gov/c2000/sf32000/SF3counties/SFdata/05030000.pdf

RISK FACTORS FOR CANCER

Cancer is really many complex diseases. There are known or suspected risk factors that increase the chances of developing some kinds of cancer, although many kinds have no known risk factors. In addition, many people who develop cancer do not have any risk factors and many people exposed to risk factors never develop cancer. It is usually impossible to identify a specific cause for an individual case of cancer. The exceptions include cancers associated with tobacco use or occupational exposure to a small number of known carcinogens (chemicals that cause cancer). People are very concerned about the possibility of environmental pollutants causing cancer but environmental exposures account for a very small proportion of cases.

Behavioral and Lifestyle Risk Factors

The most well documented and most common risk factor for many kinds of cancer is tobacco use. Ask people what kind of cancer is caused by smoking cigarettes, and most will say "Lung." Some may also mention mouth or throat cancer. In fact, smoking increases the risk of cancer throughout the body, including the sinuses, bladder, liver, kidneys, pancreas, stomach, colon and rectum, cervix, and leukemia. The wide variety of cancers caused by smoking is not surprising. Approximately 3,000 different chemicals occur naturally in tobacco leaves and 1,000 more end up in tobacco products as a result of commercial tobacco growing and processing. Cigarette smoke is the major source of exposure to chemicals that cause cancer for most people.[11] Several kinds of cancer are also increased by smoking cigars or pipes or by using smokeless tobacco. Second-hand smoke also causes cancer. Living with a smoker is associated with a 20% to 30% increased risk of developing lung cancer.[12]

Smoking also increases the harmful effects of other carcinogens; this is called a synergistic effect. Exposure to asbestos among vermiculite miners increases the risk of lung cancer five times in non-smokers, but fifty times in smokers.[13] Smaller synergistic effects have been documented between smoking and arsenic exposure and between smoking and radon exposure for lung cancer; and between smoking and alcohol consumption for cancer of the mouth, pharynx, larynx, esophagus, and liver.

It is estimated that approximately one third of all cancers in Montana residents are associated with tobacco use. This burden of cancer is entirely preventable.

The prevalence of smoking is higher among American Indian adults (26%) than White adults (16%) in Montana.[14]

[11] IARC Monographs on the Evaluation of Carcinogenic Risks To Humans. Volume 83. *Tobacco Smoke and Involuntary Smoking*. Lyon, France: Work Health Organization, 2004.
[12] US DPHHS. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. US DPHHS,CDC, Office of Smoking and Health, Atlanta, GA, 2006.
[13] http://www.atsdr.cdc.gov\toxprofiles\tp61-c3.pdf
[14] Montana Adult Tobacco Survey, 2006

Alcohol consumption increases the risk of cancer of the mouth, pharynx, larynx, esophagus, liver, and breast (female). The increased risk for these kinds of cancer can occur with regular alcohol intake as modest as two or three drinks per day.[15] For all but breast cancer, the effects of alcohol on cancer risk are greater among smokers than non-smokers.

Diet, physical activity, and obesity are also believed to play a role in the risk of developing some kinds of cancer.[16] Diets high in fat and low in fruits, vegetables, and whole grains are associated with increased risk of several kinds of cancer. In addition, adequate physical activity and maintaining a healthy weight are believed to reduce the risk of several kinds of cancer.

Genetic Risk Factors

Some kinds of cancer "run in families." It is often hard to tell if this happens because families share a genetic predisposition to cancer or because they share their home environment and lifestyle. Some genes or inherited conditions increase the risk of cancer, but all together these account for only a small proportion of cases of cancer.

Environmental Risk Factors

Carcinogens are chemicals that may cause cancer. Fewer than 50 chemicals are classified as definite or probable human carcinogens although many more are classified as possible or suspected human carcinogens.[17] Some occupations increase the risk of exposure to carcinogens. For most people, the most common source of exposure to carcinogens comes from tobacco use or exposure to second-hand tobacco smoke, vehicle exhaust, burning trash, indoor heating with wood stoves or kerosene heaters, and living in poorly maintained older housing.

Radon is a colorless, odorless radioactive gas produced by the decay of the element radium found in uranium. Radon is the second leading cause of lung cancer, after smoking, but accounts for only about 3% of all cases of lung cancer. Radon occurs naturally in many parts of the world. Montana has areas of high radon exposure because of its geology.[18] Radon evaporates from the earth and ground water and can build up in homes and other buildings. The Environmental Protection Agency recommends that all homes be tested for radon.[19] High levels of household radon can usually be reduced by ventilation of basements and crawlspaces. The State of Montana Department of Environmental Quality has a toll-free Radon Hotline at 1-800-546-0483. Radon specialists are available to provide more information about testing and abatement.

[15] Marshall JR, Freudenheim J. 2006. Alcohol. In D Schottenfeld and JF Fraumeni, eds. *Cancer Epidemiology and Prevention*. 3rd Ed. New York: Oxford Universitiy Press, pp 243-258.
[16] Willett WC. 2006. Diet and nutrition. *ibid*., 405-421; Lee IM, Oguma Y. Physical activity. *ibid*., pp 449-467; Ballard-Barbash R et al. 2006. *ibid*., 442-448.
[17] http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=116283&CFID=1026163&CFTOKEN=55611939&jsessionid=b230a50d7fb64d6567de64658542f6b49479TR; http://www.atsdr.cdc.gov/toxpro2.html
[18] http://www.epa.gov/radon/zonemap/montana.htm
[19] http://www.epa.gov/radon/pugs/citguide.html

SCREENING AND EARLY DIAGNOSIS

The second line of defense against cancer, after prevention by avoiding risk factors, is screening and early diagnosis. Some cancers can be entirely prevented by finding and treating precancerous conditions. The most dramatic example of this is cervical cancer, which was the most common cause of cancer-related death among women in the United States in 1900.[20] Invasive cervical cancer is now rare and causes relatively few deaths because the Papanicolau (Pap) smear screening test has been widely available since the 1950s. Today, most cases of precancerous conditions of the cervix are discovered at an early stage and treated before they become cancer. Most women who develop cervical cancer do so because they have not had regular screening.

Most cancer specialists and public health officials believe that colorectal cancer could be nearly eliminated, in the same way that cervical cancer has been nearly eliminated, by regular screening by of adults age 50 and older. Unfortunately, screening by either Fecal Occult Blood Testing (FOBT) or endoscopy (colonoscopy or flexible sigmoidoscopy) is very low, nationally and in Montana.

The incidence of breast cancer has been fairly constant at about 120 cases per 100,000 women for many years, nationally and in Montana. Mortality from breast cancer has been gradually decreasing due to widespread participation in mammography screening. Mammography is able to detect breast cancer when it is small and localized, when treatment can be most effective, and when survival can be excellent.

The US Preventive Services Task Force (USPSTF) conducts rigorous, impartial assessments of scientific evidence about the effectiveness of preventive health services, including cancer screening. Evidence-based recommendations for universal screening exist for cervical, colorectal, and breast cancer.[21] The USPSTF recommends that women have annual Pap smears beginning at age 21 or within three years of the beginning of sexual activity. It recommends that women begin having annual or biannual mammograms at age 40. The USPSTF recommends colorectal cancer screening with a combination of annual Fecal Occult Blood Testing plus flexible sigmoidoscopy every five years or colonoscopy ever ten years for adults age 50 and older.

Universal screening for prostate and lung cancer are not recommended at this time.[22] The USPSTF recommends that prostate cancer screening by the Prostate Specific Antigen (PSA) test be an individualized decision between a patient and his health care provider, taking into account the patient's health and medical and family history.

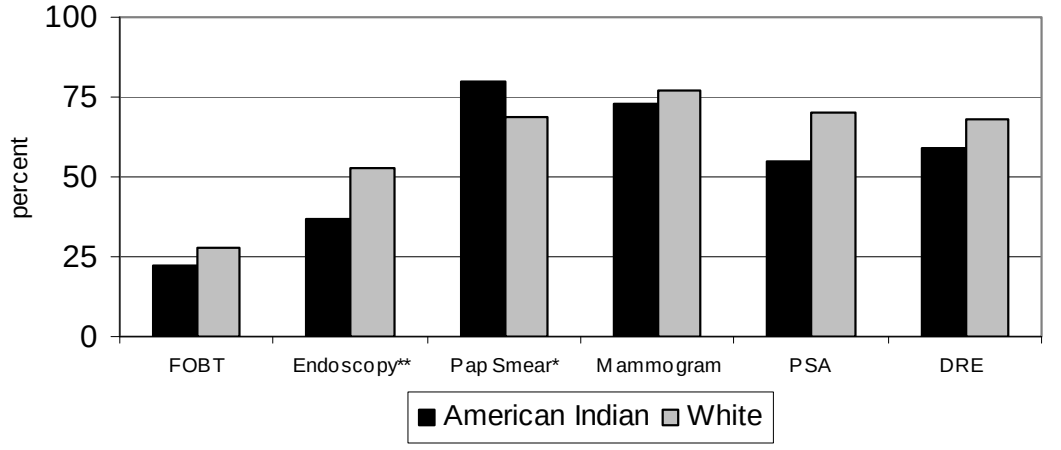
There are currently no effective screening tests for lung caner. Clinical trials are under way to evaluate new screening technologies for prostate and lung cancer.

[20] Zanoti K, Kennedy A. 1999. *Med Clin N Amer* 83:1467-1487.
[21] http://www.ahrq.gov/clinic/uspstf/uspsbrca.htm; http://www.ahrq.gov/clinic/uspstf/uspscerv.htm; http://www.ahrq.gov/uspstf/clinic/uspscolo.htm
[22] http://www.ahrq.gov/clinic/uspstf/uspsprca.htm; http://www.ahrq.gov/clinic/uspstf/uspslung.htm

CANCER SCREENING PARTICIPATION AMONG AMERICAN INDIANS IN MONTANA

The Behavioral Risk Factor Surveillance System (BRFSS) gathers information on health behaviors, including cancer screening participation.[23] According to the 2006 Montana BRFSS, colon cancer screening participation was low statewide. Fewer American Indian than White participants reported ever having an endoscopy (flexible sigmoidiscopy or colonoscopy; $p < .01$; Figure 1). Participation in Pap smear and mammography screening was higher. More American Indian women than white women reported having a recent Pap smear ($p < .05$). More than half of age-eligible men reported having a recent PSA test in spite of the lack of recommendations for universal screening.

Figure 1. Participation in Cancer Screening by Race
Montana BRFSS 2006

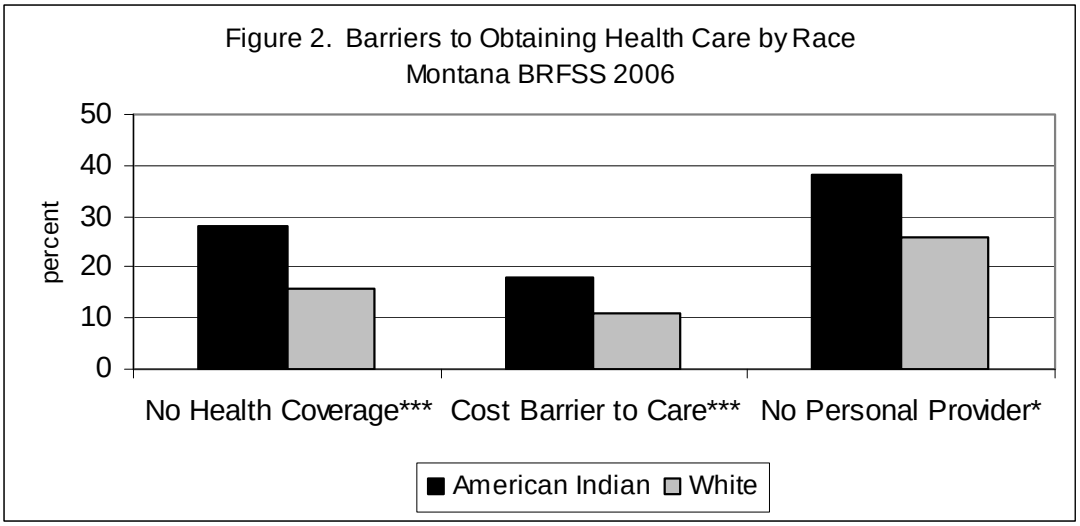


* $p < .05$, ** $p < .01$

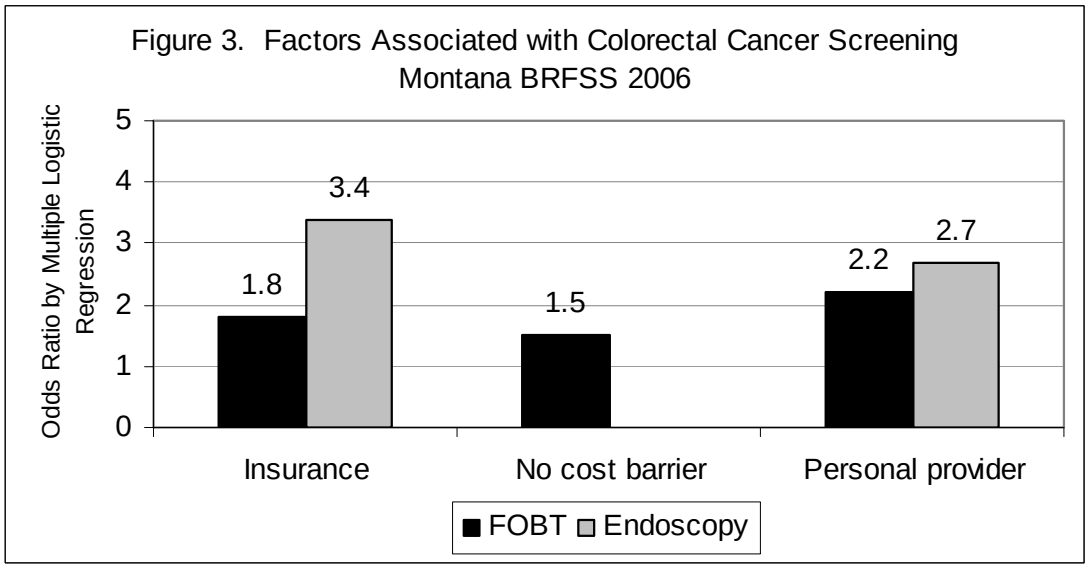
In the Montana population as a whole, lack of insurance or other health care coverage, not being able to see a doctor because of cost, and lack of someone identified as a personal health care provider were associated with low cancer screening participation. These factors were more common among American Indian than White participants in the 2006 BRFSS ($p < .001$, .001, and .05, respectively; Figure 2).

Controlling for these factors, American Indian race was not associated with lower screening participation. Individuals with health insurance were nearly twice as likely as those without to have had a Fecal Occult Blood Test (FOBT) within the past two years (Odds Ratio = 1.8, $p < .01$), and were more than three times more likely to have had an endoscopy (OR = 3.4, $p < .001$) (Figure 3). Individuals who did not experience cost as a barrier to seeing a doctor were more likely to have had a recent FOBT (OR = 1.5, $p < .05$). Individuals who had a personal health care provider were more than twice as likely to have had an FOBT or an endoscopy (OR = 2.2 and 2.7, respectively, $p < .001$).

[23] http://www/cdc/gov/brfss

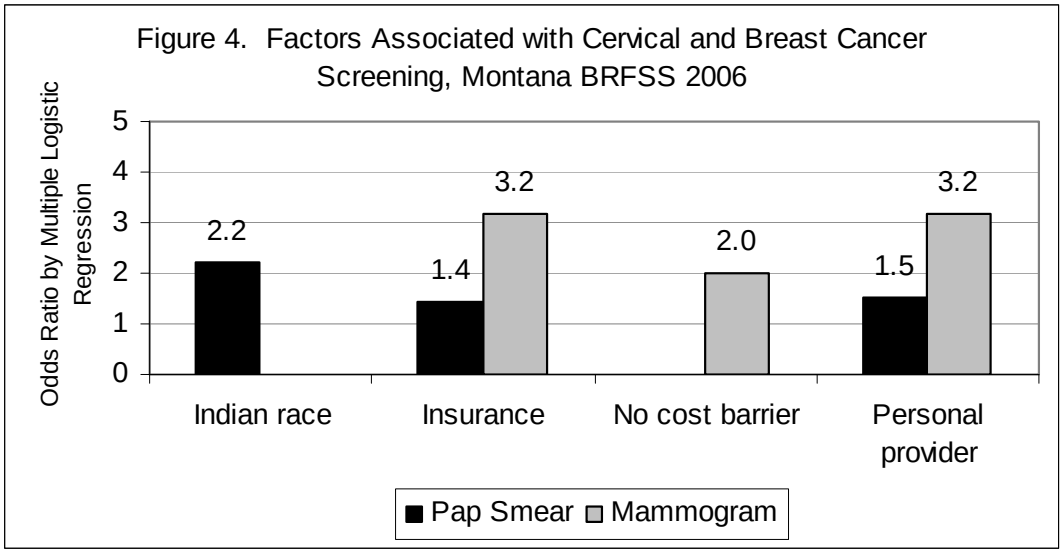


* p < .05, *** p < .001



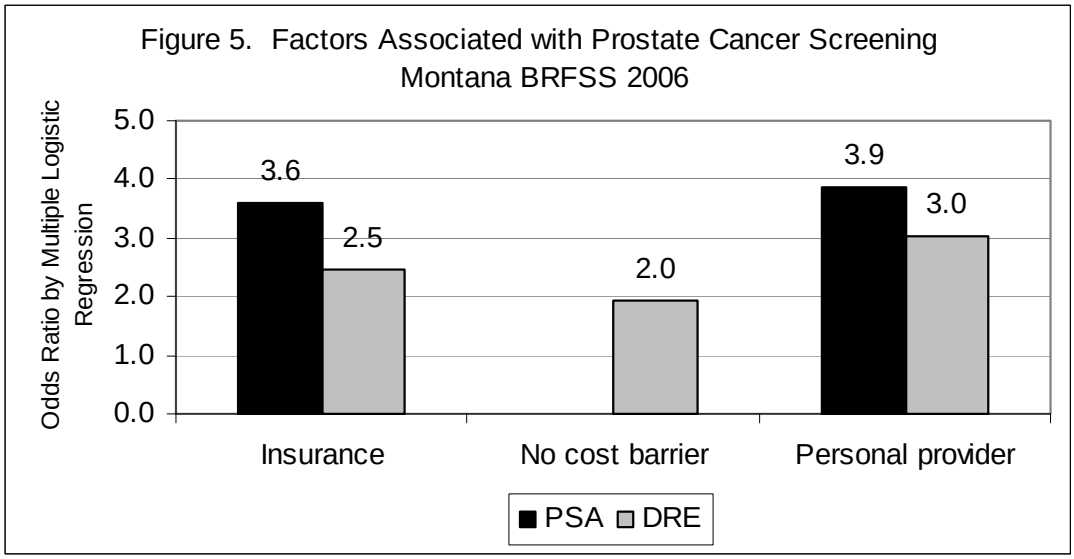
Respondents with health insurance, those who did not experience cost as a barrier to health care, and those who had a personal health care provider were more likely to have had a recent FOTB (p < .01, p < .05, and p < .001, respectively). Respondents with health insurance and those with a personal health care provider were morel likely to have had an endoscopy (p < .001).

American Indian women age 18 and older were more than twice as likely as White women to have had a Pap test within the past two years (OR = 2.2, p < .001) (Figure 4). Women with insurance and a personal health care provider were also more likely to have had a recent Pap smear (OR = 1.4 and 1.5, p < .05 and p < .001, respectively). Among women age 50 and older, those with insurance, those who did not experience cost as a barrier to seeing a doctor, and those with a personal health care provider were more likely to have had a mammogram within the past two years (OR = 3.2, 2.0, and 3.2, p< .001, p < .01, and p < .001, respectively).



American Indian women were more likely than White women to have had a recent Pap smear ($p < .001$). Women with health insurance and a personal health care provider were more likely to have had a recent Pap smear ($p < .05$ and $p < .01$, respectively). Women with health insurance, those who did not experience cost as a barrier to receiving health care, and those who had a personal health care provider were more likely to have had a recent mammogram ($p < .01$, $p < .001$, and $p < .001$, respectively).

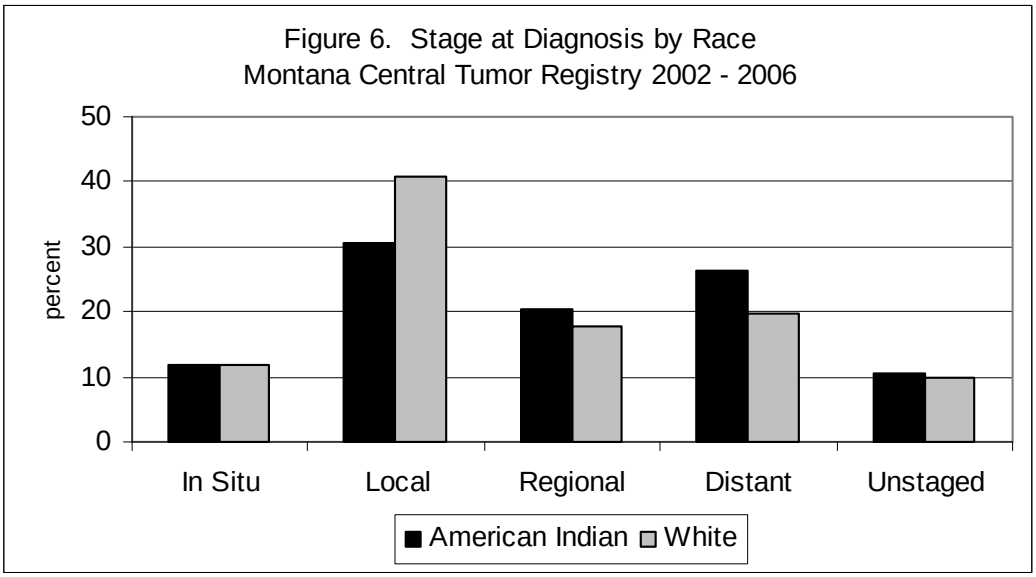
Among men age 50 and older , those with health insurance and a personal health care provider were more likely than those without to have had a Prostate Specific Antigen Test (OR = 3.6 and 3.9, $p < .001$) and a Digital Rectal Exam (OR = 2.5 and 3.0, $p < .001$) within the past two years (Figure 5). Men who did not experience cost as a barrier to seeing a doctor were also more likely to have had a DRE (OR = 2.0, $p < .05$).



Men with health insurance and those with a personal health care provider were more likely to have had are recent PSA test ($p < .001$). Men with health insurance, those who did not experience cost as a barrier to receiving health care, and those with a personal health care provider were more likely to have had a recent DRE ($p < .001$, $p < .05$, and $p < .001$, respectively).

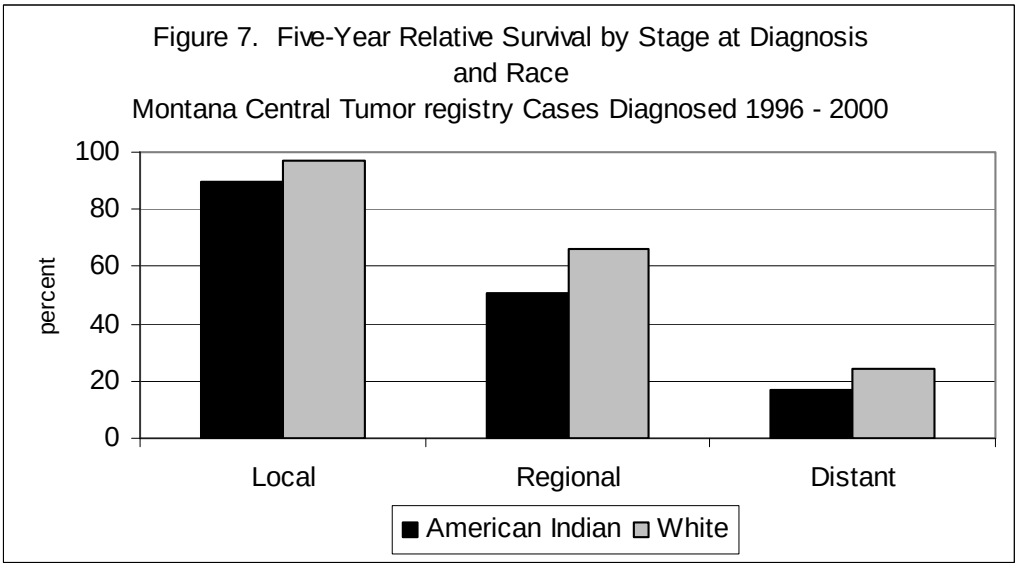
STAGE AT DIAGNOSIS AND SURVIVAL

American Indian cancer patients in Montana tend to be diagnosed at a later stage than White patients (Figure 6). Fewer American Indians were diagnosed at the local stage and more were diagnosed at the distant stage than Whites ($p < .01$).



Difference in stage at diagnosis by race was statistically significant at $p < .01$.

Survival was excellent for American Indian and White patients diagnosed at the local stage (Figure 7). Survival was poor for all patients diagnosed at the distant stage. The greatest difference in survival between American Indian and White patients occurred among patients diagnosed at the regional stage.



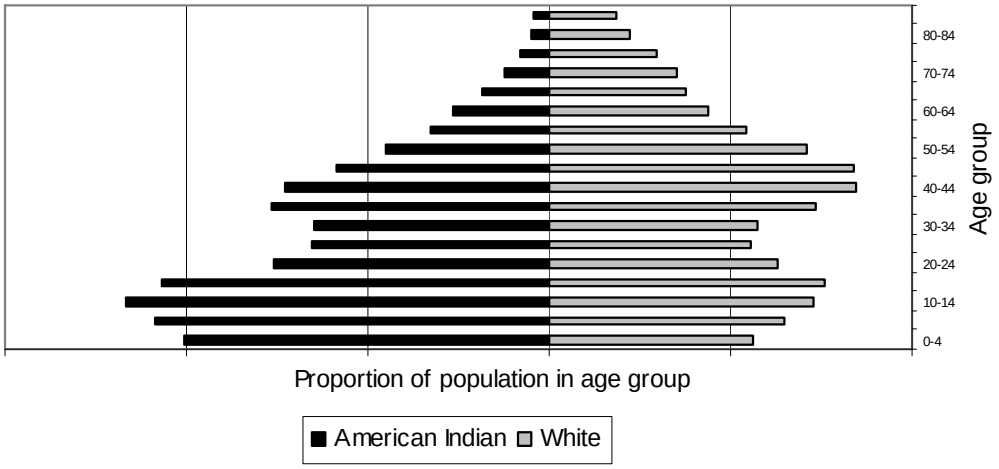
Differences in survival by stage at diagnosis were statistically significant for both American Indian and White patients ($p < .01$). Differences in survival by race were statistically significant at each stage at diagnosis ($p < .01$, $p < .01$, and $p < .05$ by stage).

CANCER IS THE SECOND LEADING CAUSE OF DEATH AMONG AMERICAN INDIANS IN MONTANA

Cancer is becoming more common in all communities as other causes of death are brought under control and life expectancy increases. In the United States in 1900, infectious diseases caused 40% of all deaths, heart disease and stroke caused 14%, and cancer caused only 4%. By 2000, cancer caused 23% of all deaths in the United States and infectious diseases caused only 4%. Cancer usually occurs in people who are middle-aged or older. In 1900, only 18% of United States residents were age 45 or older. In 2000, 34% of United States residents were age 45 or older.

The American Indian population of Montana is younger than the White population. Only 21% of American Indians were age 45 or older in the 2000 census, compared to 40% of Whites (Figure 8). American Indian and White cancer burden can still be compared by using age-adjusted incidence and mortality rates, which takes into account the differences in age structure of populations.

Figure 8. American Indian and White Population Pyramid for Montana, Census 2000



Cancer caused 21% of deaths among American Indians in Montana in 2004 through 2006, slightly less than heart disease and stroke (24%) and less than all other chronic diseases combined (16%) (Figure 9). Cancer caused 24% of deaths among Whites (Figure 10). The greatest differences in cause of death between American Indians and Whites were in other chronic diseases (25% among Whites) and injury, suicide, and homicide (14% among American Indians and 8% among Whites).

Figure 9. Causes of Death Among
American Indian Residents of Montana, 2004 - 2006

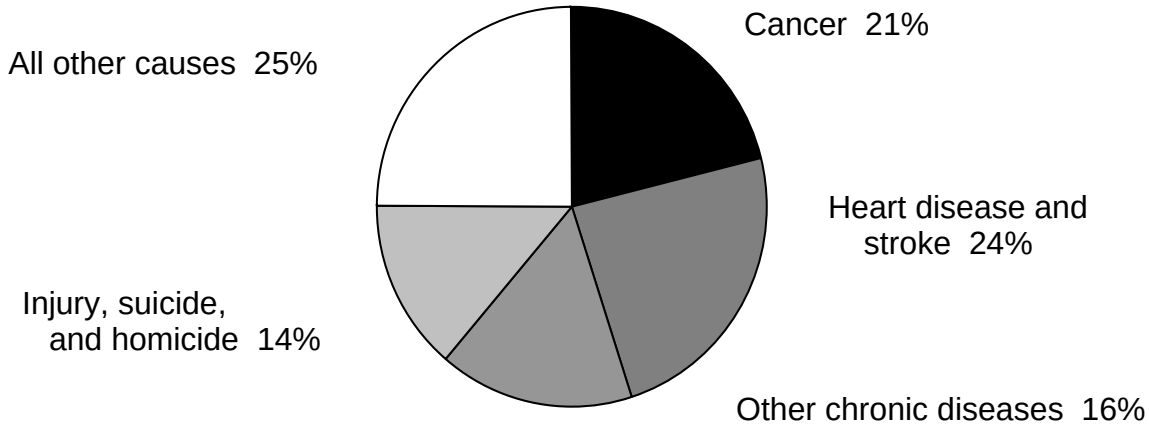
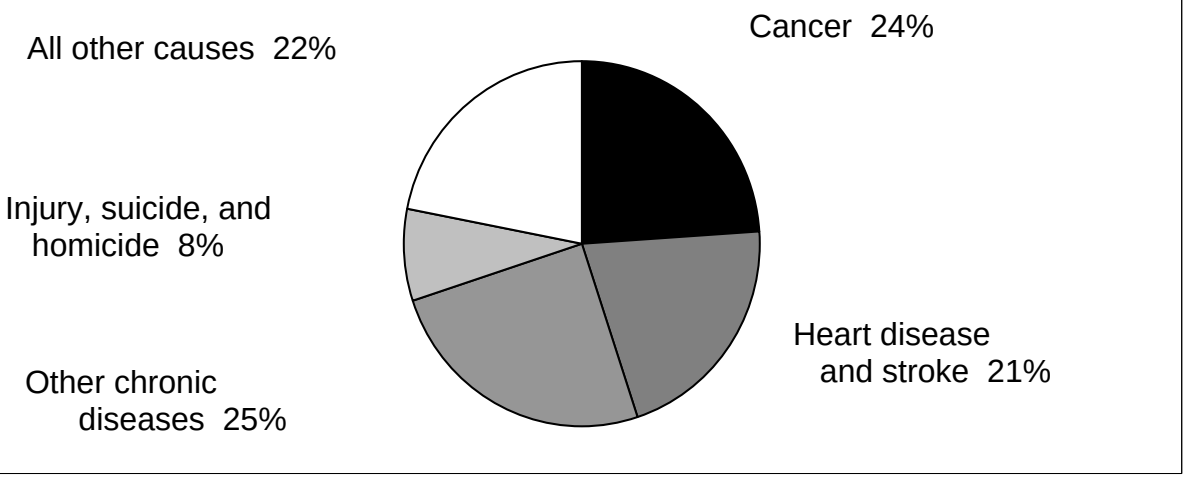


Figure 10. Causes of Death Among
White Residents of Montana, 2002 - 2006



THE MOST COMMON CANCERS
INCIDENCE

American Indian	White
1. Lung and bronchus (20.0%)	1. Prostate (17.5%)
2. Breast (female) (12.2%)	2. Lung and bronchus (13.9%)
3. Prostate (11.2%)	3. Breast (female) (13.6%)
4. Colon and rectum (11.2%)	4. Colon and rectum (9.9%)
5. Non-Hodgkin lymphoma (4.4%)	5. Urinary bladder (5.0%)
6. Kidney and renal pelvis (3.6%)	6. Non-Hodgkin lymphoma (3.9%)
7. Urinary bladder (3.6%)	7. Melanoma of the skin (3.6%)
8. Pancreas (3.0%)	8. Leukemia (2.8%)
9. Stomach (2.7%)	9. Kidney and renal pelvis (2.6%)
10. Uterus (2.6%)	10. Uterus (2.6%)
11. Liver and bile duct (2.4%)	11. Thyroid (2.5%)
12. Leukemia (2.3%)	12. Oral cavity, pharynx (2.3%)
13. Oral cavity, pharynx (2.3%)	13. Pancreas (2.3%)
14. Brain, central nervous system (1.9%)	14. Ovary (1.6%)
15. Ovary (1.4%)	15. Brain, central nervous system (1.6%)
16. Thyroid (1.2%)	16. Stomach (1.3%)
17. Melanoma of the skin (1.0%)	17. Multiple myeloma (1.2%)
18. Esophagus (1.0%)	18. Esophagus (1.0%)
19. Multiple myeloma (1.0%)	19. Cervix (0.7%)
20. Gallbladder (1.0%)	20. Larynx (0.7%)

Among both American Indian and White residents, cancer at four sites (lung and bronchus, female breast, prostate, and colon and rectum) accounted for 55% of all cancers diagnosed between 2002 and 2006. The relative importance of the four sites differed. Lung cancer was the most common cancer among American Indians, accounting for 20.0% of all new diagnoses, but it was second among Whites, accounting for only 13.9%.

The remaining 16 cancers on the lists each accounted for 5% or less of all cancers diagnosed and many accounted only 1% or 2% of all cancers. Jointly, the 20 most common cancers accounted for 90% of all cases in both American Indian and White residents of Montana. Other cancers were rare and each accounted for a fraction of 1% of all cancers. A complete list of all incident cancers by race is presented in Appendix IV.

Most of the 20 most common cancers were the same on the two lists, with a few exceptions. Cancer of the liver and bile duct appeared at number 11 and cancer of the gallbladder appeared at number 20 among American Indians but were not in the first 20 among Whites. Stomach cancer appeared on both lists but was twice as common among American Indians as among Whites. Melanoma of the skin and thyroid cancer appeared on both lists, but were more common among Whites than among American Indians. Cancer of the cervix and cancer of the larynx appeared in positions 19 and 20 on the list for Whites but not at all on the list for American Indians.

THE MOST COMMON CANCERS
MORTALITY

American Indian

1. Lung and bronchus (27.0%)
2. Colon and rectum (8.8%)
3. Breast (female) (6.9%)
4. Prostate (6.4%)
5. Pancreas (4.9%)
6. Brain, other nervous system (3.7%)
7. Non-Hodgkin lymphoma (3.5%)
8. Stomach (3.1%)
9. Liver and bile duct (2.8%)
10. Leukemia (2.6%)
11. Kidney and renal pelvis (2.3%)
12. Esophagus (2.1%)
13. Multiple myeloma (2.0%)
14. Oral cavity and pharynx (1.3%)
15. Gallbladder (1.0%)
16. Melanoma of the skin (1.0%)
17. Bladder (0.7%)
18. Uterus (0.6%)
19. Ovary (0.5%)
20. Thyroid (0.1%)

White

1. Lung and bronchus (28.1%)
2. Colon and rectum (9.3%)
3. Breast (female) (6.8%)
4. Prostate (6.3%)
5. Pancreas (5.6%)
6. Leukemia (4.2%)
7. Oral cavity and pharynx (4.2%)
8. Non-Hodgkin lymphoma (3.9%)
9. Brain, other nervous system (3.5%)
10. Ovary (3.0%)
11. Esophagus (2.6%)
12. Bladder (2.4%)
13. Kidney and renal pelvis (2.3%)
14. Multiple myeloma (2.0%)
15. Melanoma of the skin (1.6%)
16. Stomach (1.6%)
17. Uterus (1.5%)
18. Liver and bile duct (1.3%)
19. Gallbladder (1.1%)
20. Thyroid (0.2%)

Among both American Indian and White residents of Montana, cancer of the lung and bronchus accounted for more than one quarter of all cancer deaths between 2002 and 2006. This burden of cancer mortality is almost entirely preventable. It is estimated that 95% of all lung cancer is caused by smoking.

Colorectal cancer mortality was a distant second, accounting for approximately 9% of cancer deaths among both American Indians and Whites. Breast cancer accounted for approximately 7% and prostate cancer for approximately 6% for both groups. The remaining causes of cancer mortality are similar for American Indian and White residents of Montana, and cancer at the remaining sites accounted for only small proportions of cancer deaths.

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SUMMARIES FOR SPECIFIC CANCERS

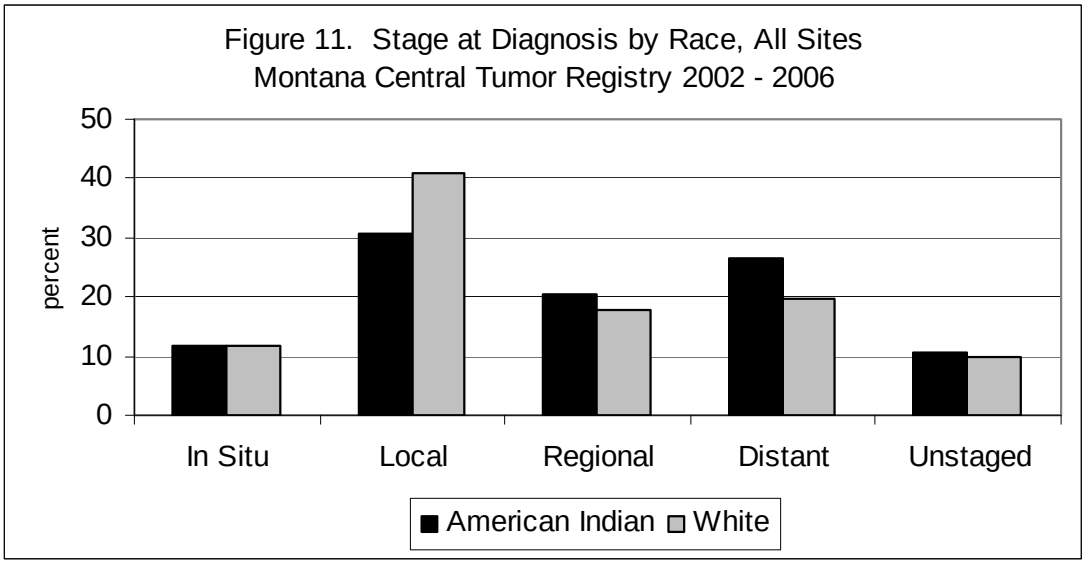
All Sites

Sites in Order of Incidence:

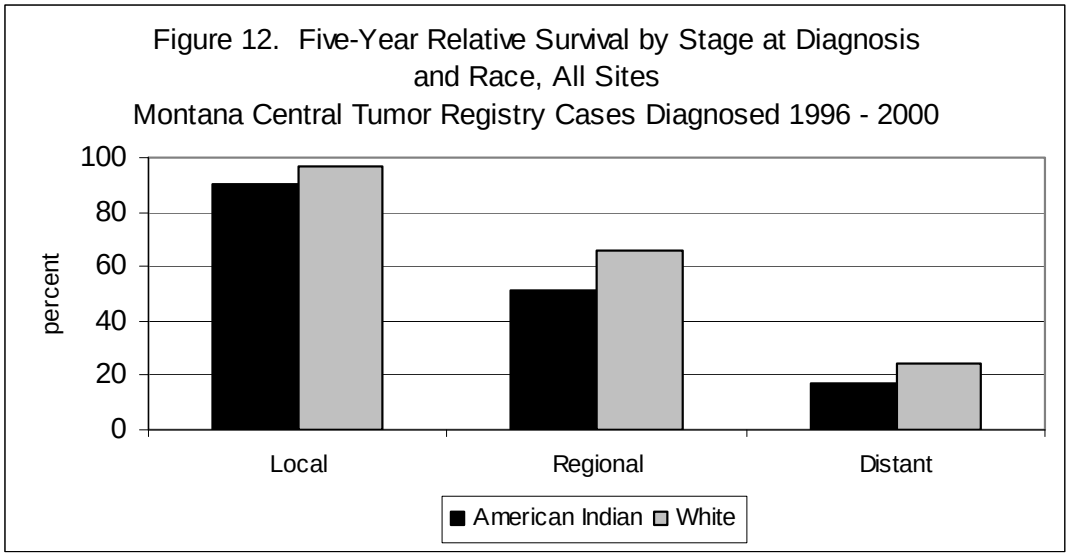
Lung and Bronchus
Breast (Female)
Prostate
Colon and Rectum
Non-Hodgkin Lymphoma
Kidney and Renal Pelvis
Urinary Bladder
Pancreas
Stomach
Uterus
Liver and Bile Duct
Leukemia
Oral Cavity and Pharynx
Brain and Other Nervous System
Ovary
Thyroid
Melanoma of the Skin
Esophagus
Multiple Myeloma
Gallbladder

ALL SITES

Table 1. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	546.4	470.4 §	500.8 §	527.4 ¶	396.2 ¶ §	454.0 §
95% CI‡	487.5 - 605.3	424.6 - 516.2	464.9 - 536.7	517.9 - 536.9	388.4 - 404.0	448.0- 460.0
Mortality Rate†	277.5 §	227.1 §	249.3 §	211.9 ¶§	156.5 ¶§	179.4 §
95% CI‡	238.7 - 316.3	195.9 - 258.3	224.9 - 273.7	205.8 - 218.0	151.8 - 161.2	175.7 - 183.1
Number of Incident Cases						
Invasive	413	470	883	12,616	10,947	23.563
In Situ	28	93	121	1,215	2,006	3,221
Uncertain	0	8	8	38	62	100
Benign	3	8	11	109	213	322
* Rates include all invasive cases plus bladder in situ cases.						
¶ Rates statistically significantly different between sexes within race.						
§ Rates statistically significantly different between races within sex or total.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						



Differences in stage at diagnosis between American Indian and White patients were statistically significant at p < .01.



Differences in survival by stage at diagnosis were statistically significant for both American Indian and White patients ($p < .01$). Differences in survival by race were statistically significant at each stage at diagnosis ($p < .01$, $p < .01$, and $p < .05$ by stage).

The incidence of all cancers combined was greater for American Indian women than for White women in Montana, and was greater for American Indians overall than for Whites overall (Table 1). Mortality from all cancers combined was higher for American Indian men than for White men in Montana, greater for American Indian women than for White women, and greater for American Indians overall than for Whites overall.

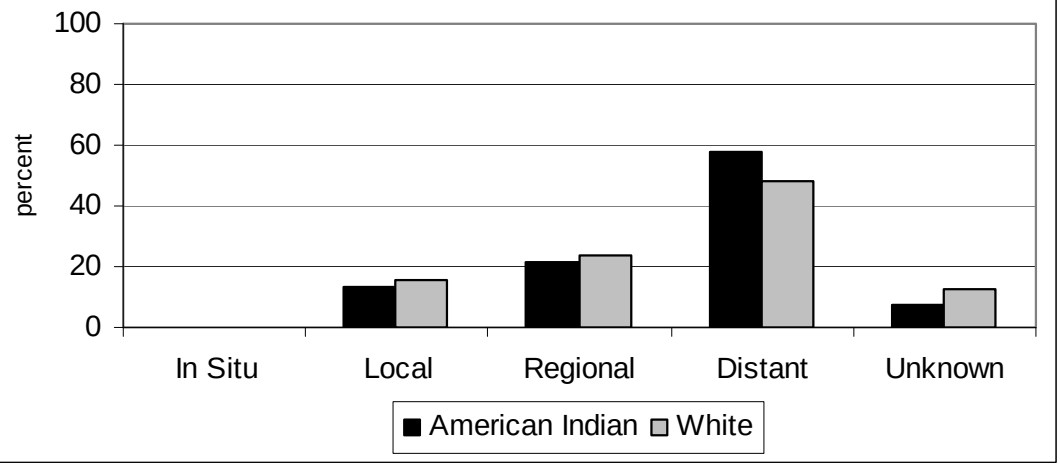
The greater mortality among American Indian patients may be due in part to later stage at diagnosis (Figure 11). Fewer American Indian than White patients were diagnosed at the local stage and more were diagnosed at the distant stage ($p < .01$).

For both American Indian and White patients, five-year survival was much better for patients whose cancer was diagnosed at the local stage than at the regional or distant stage ($p < .01$) (Figure 12). Survival was poor for all patients diagnosed at the distant stage. Five-year survival was poorer for American Indian patients than for White patients at all stages of diagnosis ($p < .01$, $p < .05$, and $p < .05$ by stage).

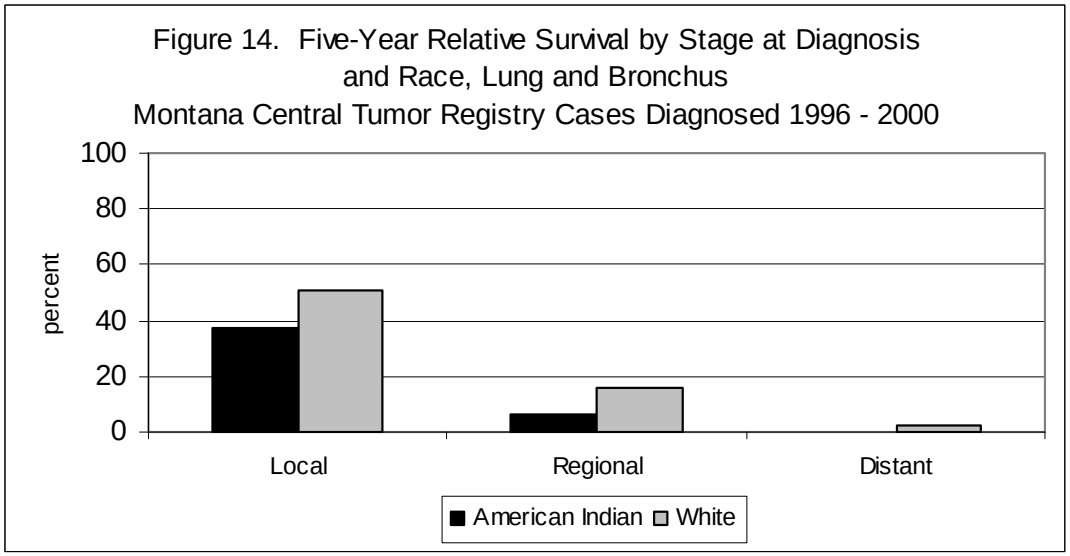
LUNG AND BRONCHUS

Table 2. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	113.2 §	88.4 §	100.6 §	73.4 ¶ §	55.6 ¶ §	63.3 §
95% CI‡	86.3 - 140.1	68.0 - 108.8	83.9 - 117.3	69.8 - 77.0	52.7 - 58.5	61.1 - 65.5
Mortality Rate†	79.7	55.6	67.0 §	61.0 ¶	42.4 ¶	50.4 §
95% CI‡	58.6 - 100.7	40.2 - 71.0	54.2 - 79.8	57.8 - 64.2	39.9 - 44.9	48.4 - 52.4
Number of Incident Cases						
Invasive	80	83	163	1,791	1,571	3,362
In Situ	0	0	0	4	0	4
Uncertain	0	0	0	1	0	1
* Rates include all invasive cases.						
¶ Rates statistically significantly different between sexes within race.						
§ Rates statistically significantly different between races within sex or total.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						

Figure 13. Stage at Dagnosis by Race, Lung Cancer
Montana Central Tumor Registry 2002-2006



Differences in stage at diagnosis between American Indian and White patients were not statistically significant.



Differences in survival by stage at diagnosis were statistically significant for both American Indian and White patients ($p < .01$). Differences in survival by race were not statistically significant for patients diagnosed at the local or distant stage; survival was significantly greater for White patients than for American Indian patients diagnosed at the regional stage ($p < .05$).

The incidence rate of lung cancer among American Indian men and women was twice as high as among White men and women in Montana (Table 2). Mortality from lung cancer was greater among American Indian patients than among White patieints. The higher incidence and mortality rates were associated with substantially higher smoking prevalence among American Indians in Montana: 26% of American Indian adults smoke cigarettes compared to 16% of White adults.[24] It is estimated that 90% of lung cancer is caused by smoking. The remaining 10% is attributed primarily to exposure to second-hand smoke and environmental radon.

American Indian patients were diagnosed at a later stage than White patients ($p < .05$) (Figure 13). There are no accepted screening tests for lung cancer at this time and most patients are diagnosed only when they become symptomatic. More than half of all patients, regardless of race, are diagnosed at the distant stage, when survival is very poor.

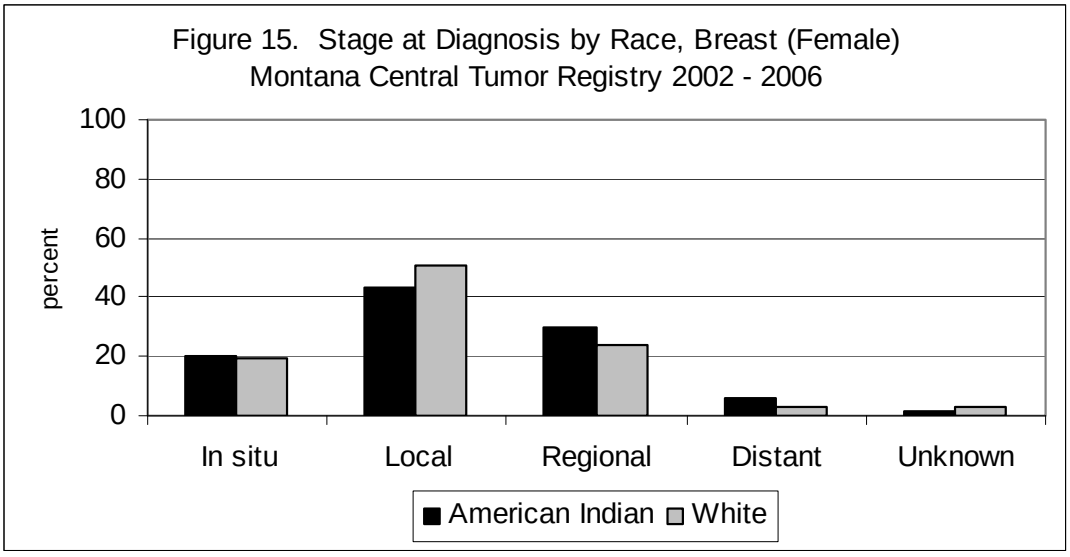
Survival with lung cancer is poor even when diagnosed at the local stage (Figure 14). Only 38% of American Indian patients diagnosed at the local stage, and only 6% diagnosed at the regional stage, survived for five years. Among American Indian patients diagnosed with cancer of the lung and bronchus at the distant stage, none survived for more than one year. Survival was not statistically significantly different for American Indian and White patients diagnosed at the local stage, but was poorer for American Indians than for Whites diagnosed at the regional or distant stages ($p < .05$).

[24] Montana Adult Tobacco Survey, 2006.

BREAST (FEMALE)

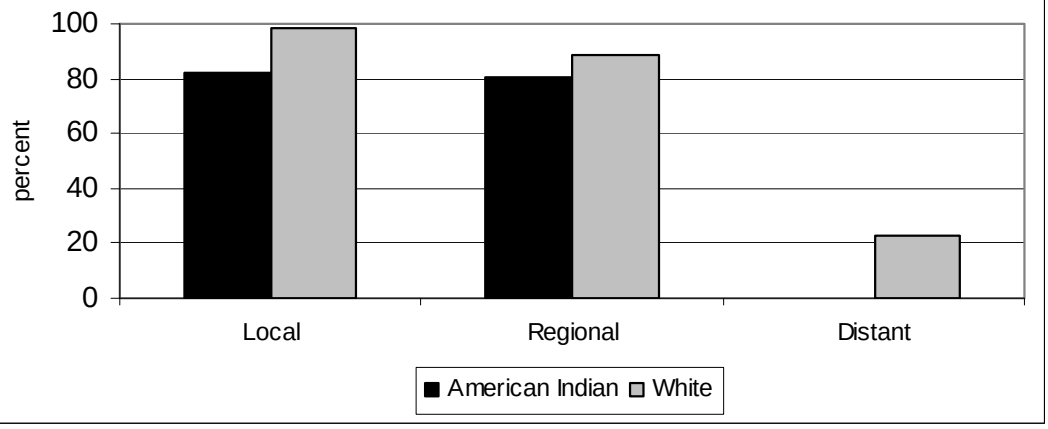
Table 3. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	---	112.5	---	---	117.9	---
95% CI‡	---	91.2 - 133.8	---	---	113.6 - 122.2	---
Mortality Rate†	---	30.0	---	---	22.7	---
95% CI‡	---	18.2 - 41.7	---	---	20.9 - 24.5	---
Number of Incident Cases						
Invasive	---	122	---	---	3,235	---
In Situ	---	30	---	---	756	---
Uncertain	---	0	---	---	0	---
* Rates include all invasive cases.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						

Figure 15. Stage at Diagnosis by Race, Breast (Female)
Montana Central Tumor Registry 2002 - 2006



Differences in stage at diagnosis by race were not statistically significant.

Figure 16. Five-Year Relative Survival by Stage at Diagnosis and Race, Breast Cancer (Female)
Montana Central Tumor Registry Cases Diagnosed 1996 - 2000



Differences in survival by stage at diagnosis were statistically significant for both American Indian and White patients ($p < .01$). Differences in survival by race were statistically significant at each stage of diagnosis ($p < .05$).

The incidence and mortality rates for breast cancer did not differ between American Indian and White women (Table 3).

Stage at diagnosis did not differ significantly between American Indian and White women (Figure 15).

For both American Indian and White women, five-year survival was better for women diagnosed at the local than at the regional or distant stages ($p < 01$) (Figure 16). Five-year survival was greater for White than for American Indian women at each stage of diagnosis ($p < .05$).

PROSTATE

Table 4. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	131.5 §	---	---	168.8 §	---	---
95% CI‡	101.1 - 161.9	---	---	163.3 - 174.1	---	---
Mortality Rate†	42.0	---	---	28.2	---	---
95% CI‡	23.1 - 60.9	---	---	25.9 - 30.5	---	---
Number of Incident Cases						
Invasive	96	---	---	4,263	---	---
In Situ	9	---	---	338	---	---
Uncertain	0	---	---	0	---	---

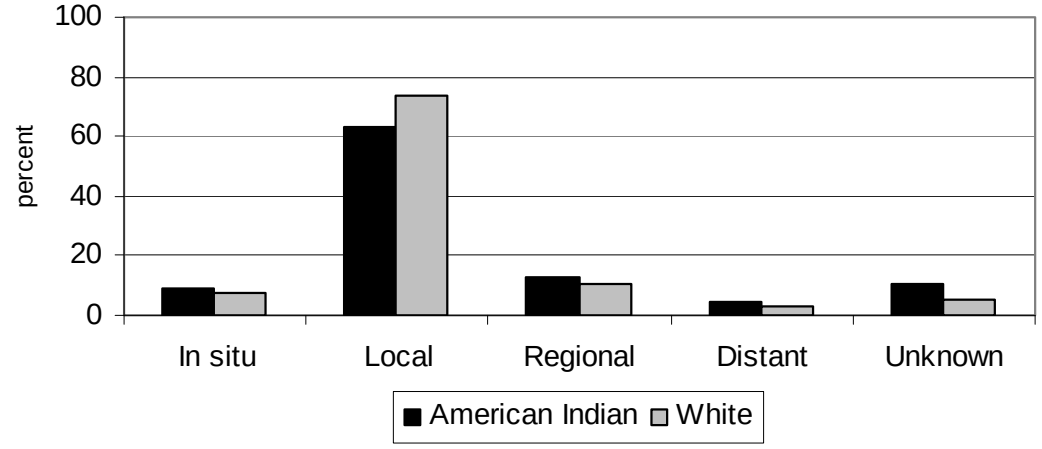
* Rates include all invasive cases.

§ Rates statistically significantly different between races within sex.

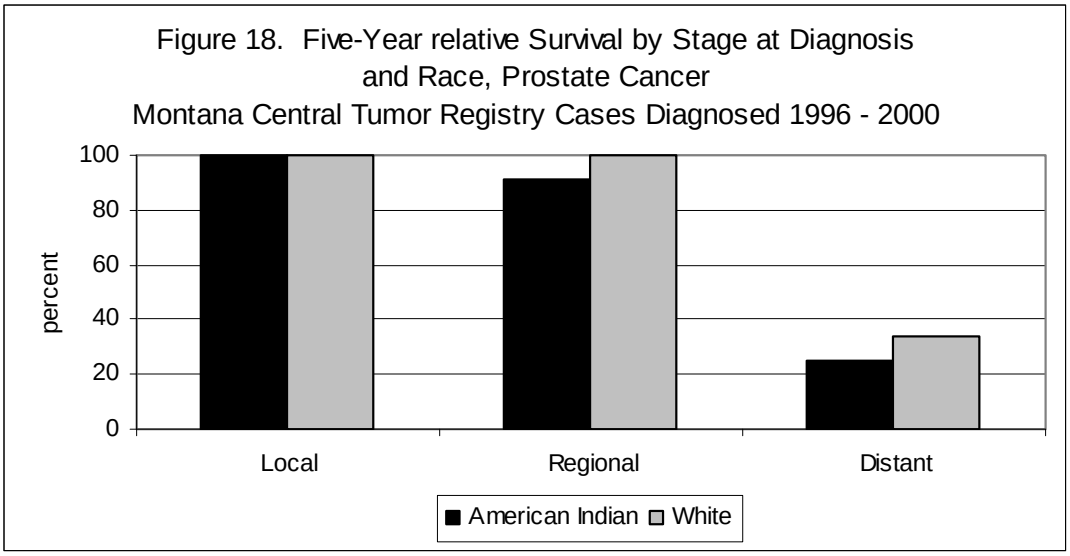
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.

‡ 95% Confidence Interval around the estimated rate.

Figure 17. Stage at Diagnosis by Race, Prostate
Montana Central Tumor Registry 2002 - 2006



Differences in stage at diagnosis by race were not statistically significant.



Differences in survival between distant stage at diagnosis compared to local or regional stage at diagnosis were statistically significant for both American Indian and White men ($p < .01$).Differences in survival by race were not statistically significant at any stage.

American Indian men had a statistically significantly lower incidence rate of prostate cancer than white men; mortality rates were not statistically different (Table 4).

Stage at diagnosis did not differ between American Indian and White men (Figure 17).

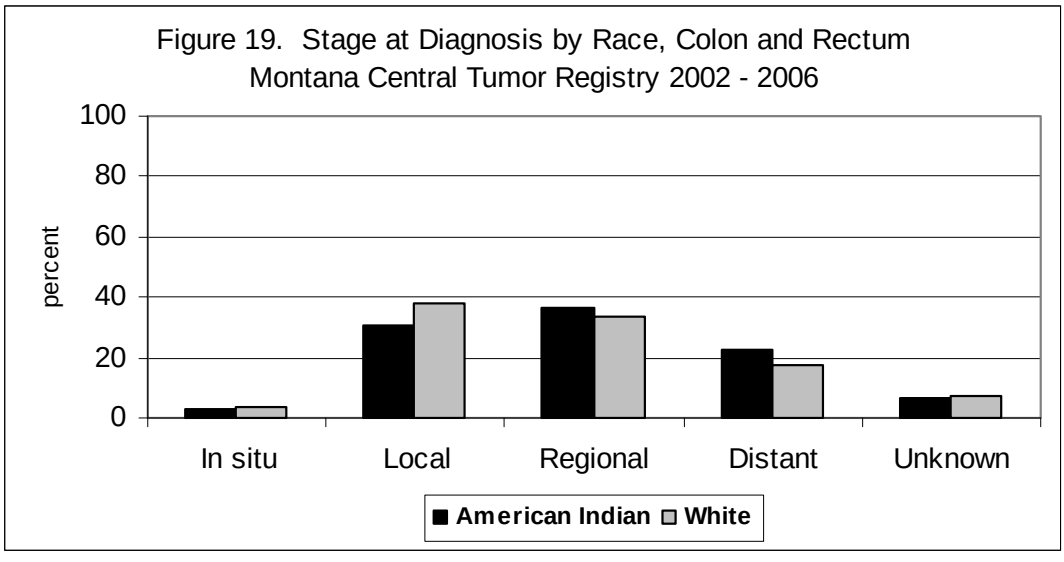
Among both American Indian and White men, survival did not differ between men diagnosed at the local and regional stage; men diagnosed at the distant stage had much poorer survival ($p < .01$) (Figure 18). Within stages at diagnosis, survival did not differ for American Indian and White men.

Prostate cancer is the most common cancer in Montana and the United States but little is known about its causes. The primary risk factor is increasing age. Prostate cancer is rare before age 50. The incidence rate increases dramatically between ages 50 and 70. The American Indian population of Montana is younger than the White population. Although computed incidence and mortality rates are age-adjusted, this does not entirely remove the effect of shorter lifespan of American Indian men. Fewer American Indian men than White men survive into the highest-risk age groups for prostate cancer. Half of American Indian men in Montana die before age 57, compared age 76 for White men.[25] As the lifespan of American Indian men in Montana increases, there might be an increase in the incidence of prostate cancer.

[25] Office of Vital Statistics, Montana Department of Public Health and Human Services. *2006 Montana Vital Statistics Report*, January 2008, p. 51.

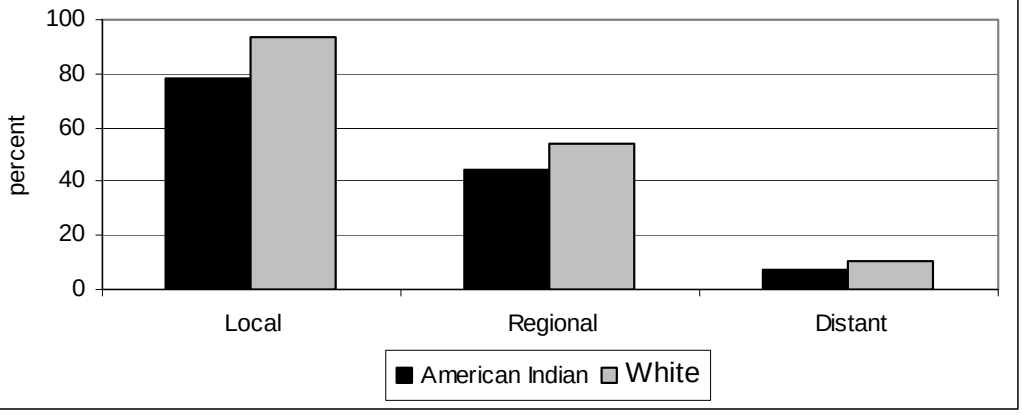
COLON AND RECTUM

Table 5. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	69.2	43.0	55.9	51.0 ¶	39.7 ¶	44.8
95% CI‡	49.5 - 88.9	28.5 - 57.5	43.7 - 68.1	48.0 - 54.0	37.3 - 42.1	43.1 - 46.5
Mortality Rate†	28.8	15.5	21.9	19.4 ¶	14.5 ¶	16.7
95% CI‡	16.8 - 40.8	6.7 - 24.3	14.5 - 29.3	17.6 - 21.2	13.2 - 15.9	15.6 - 17.8
Number of Incident Cases						
Invasive	57	40	97	1,236	1,152	2,388
In Situ	3	0	3	51	30	81
Uncertain	0	2	2	10	10	20
* Rates include all invasive cases.						
¶ Rates statistically significantly different between sexes within race.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						



Differences in stage at diagnosis by race were not statistically significant.

Figure 20. Five-Year Relative Survival by Stage at Diagnosis and Race, Colorectal Cancer
Montana Central Tumor Registry Cases Diagnosed 1996 - 2000



Differences in survival by race were not statistically significant at any stage. Among American Indians patients, survival was poorer for patients diagnosed at the distant than at the local or regional stages ($p < .05$). Among White patients, survival differed between each stage ($p < .05$).

There were no differences in colorectal cancer incidence or mortality between American Indian and White residents of Montana (table 5).

There were no differences in stage at diagnosis (Figure 19) in spite of lower participation in screening by American Indians.[26]

Among American Indian patients, differences in survival between the local and regional stage at diagnosis were not statistically significant, but survival was poorer among patients diagnosed at the distant stage ($p < .05$) (Figure 20). Among White patients, survival was significantly better among patients diagnosed at the local than at the regional stages, and between those diagnosed at the regional and distant stages ($p < .05$). Survival within each stage was not statistically significantly different by race.

[26] Montana Behavioral Risk Factor Surveillance System, 2006

NON-HODGKIN LYMPHOMA

Table 6. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	24.6	18.9	21.8	22.2 ¶	14.2 ¶	17.9
95% CI‡	11.9 - 37.3	9.1 - 28.7	13.8 - 29.0	20.2 - 24.2	12.7 - 15.7	16.7 - 19.1
Mortality Rate†	10.1	7.1	8.7	8.8 ¶	5.6 ¶	7.0
95% CI‡	3.1 - 17.1	1.4 - 12.8	4.1 - 13.3	7.6 - 10.0	4.7 - 7.4	6.3 - 7.7
Number of Incident Cases						
Invasive	17	16	33	500	380	880
In Situ	0	0	0	0	0	0
Uncertain	0	0	0	0	0	0

KIDNEY AND RENAL PELVIS

Table 7. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	22.8	13.7	18.1	16.2 ¶	8.3 ¶	12.0
95% CI‡	12.9 - 32.7	6.2 - 21.2	12.0 - 24.2	14.5 - 17.9	7.2 - 9.4	11.0 - 13. 0
Mortality Rate†	6.2	5.4	5.8	6.3 ¶	2.6 ¶	4.2
95% CI‡	5.7 - 11.2	1.7 - 9.7	2.5 - 9.1	5.3 - 7.5	2.0 - 3.2	3.6 - 4.8
Number of Incident Cases						
Invasive	24	14	38	400	222	622
In Situ	0	0	0	7	1	8
Uncertain	0	0	0	0	0	0

* Rates include all invasive cases.
¶ Rates statistically significantly different between sexes within race.
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.
‡ 95% Confidence Interval around the estimated rate.

BLADDER

Table 8. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	37.7 ¶	5.2 ¶	17.8	40.2 ¶	8.9 ¶	22.8
95% CI‡	19.1 - 56.3	0.5 - 9.9	10.5 - 25.1	37.5 - 42.9	7.8 - 10.0	21.5 - 23.1
Mortality Rate†	5.1	0	1.8	7.4 ¶	2.1 ¶	4.3
95% CI‡	0 - 10.9	---	0 - 3.9	6.3 - 8.7	1.6 - 2.6	3.7 - 4.9
Number of Incident Cases						
Invasive	10	3	13	467	129	596
In Situ	11	2	13	488	135	623
Uncertain	0	0	0	0	0	0

PANCREAS

Table 9. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	12.2	16.8	14.9	11.8 ¶	9.1 ¶	10.4
95% CI‡	4.4 - 20.0	7.4 - 26.2	8.6 - 21.2	10.4 - 13.2	8.0 - 10.2	9.5 - 11.3
Mortality Rate†	11.6	12.1	12.1	11.1 ¶	8.5 ¶	10.0
95% CI‡	4.7 - 18.5	4.6 - 19.6	6.9 - 17.3	10.2 - 13.0	7.4 - 9.6	9.1 - 10.9
Number of Incident Cases						
Invasive	11	14	25	296	278	574
In Situ	0	0	0	0	2	2
Uncertain	0	0	0	0	0	0

* Rates include all invasive cases and in situ cases for bladder cancer; rates include only invasive cases for pancreas.

¶ Rates statistically significantly different between sexes within race.

† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.

‡ 95% Confidence Interval around the estimated rate.

STOMACH

Table 10. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	16.4	10.9	13.3 §	8.2 ¶	3.6 ¶	5.7 §
95% CI‡	7.0 - 25.8	4.2 - 17.6	7.7 - 18.9	7.0 - 9.4	0.9 - 4.3	5.0 - 6.4
Mortality Rate†	9.7	6.0	7.7 §	4.2 ¶	2.0 ¶	2.9 §
95% CI‡	3.0 - 16.4	1.2 - 10.8	3.7 - 11.7	3.3 - 5.1	1.5 - 2.5	2.5 - 3.5
Number of Incident Cases						
Invasive	14	13	27	224	125	349
In Situ	0	0	0	4	3	7
Uncertain	0	0	0	0	2	2
* Rates include all invasive cases.						
¶ Rates statistically significantly different between sexes within race.						
§ Rates statistically significantly different between races within sex or total.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						

American Indian residents of Montana have a higher incidence rate for stomach cancer than White residents, and a higher mortality rate as well. Risk factors for stomach cancer include smoking cigarettes and infection with *Helicobacter pylori*. [27]

H. pylori is a bacterium that infects the lining of the stomach and causes chronic irritation. This irritation can lead to the development of ulcers and some kinds of stomach cancer.[27] Among American Indian residents of Montana, the kinds of stomach cancer associated with *H. pylori* accounted for half of all stomach cancers. Among White residents of Montana, the kinds of stomach cancer associated with *H. pylori* accounted for only one third of all stomach cancers.

In the United States, infection with *H. pylori* is usually acquired in childhood or adolescence and lasts throughout life. It is less common in more affluent communities and is more common where community sanitation is poor.[28] As many as 25% to 50% of residents of the United States are infected with *H. pylori* [29] and stomach cancer is uncommon, so *H. pylori* is usually interpreted as a risk factor that is not sufficient by itself to cause stomach cancer.

[27] McNamara D, El-Omar E. 2008. *Dig Liver Dis* e-pub May 15, 2008
[28] Brown LM. 2000. *Epidemiol Rev* 22:283-297.
[29] Everhart JE et al. 2000. *J Infect Dis* 181:1359-1363.

UTERUS

Table 11. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	---	24.4	---	---	22.5	---
95% CI‡	---	14.1 - 34.7	---	---	20.7 - 24.3	---
Mortality Rate†	---	3.4	---	---	4.9	---
95% CI‡	---	0.1 - 6.7	---	---	4.1 - 5.7	---
Number of Incident Cases						
Invasive	---	25	---	---	611	---
In Situ	---	1	---	---	6	---
Uncertain	---	0	---	---	0	---
* Rates include all invasive cases.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						

LIVER AND BILE DUCT

Table 12. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	14.1 §	9.5	11.9 §	4.4 ¶ §	2.3 ¶	3.3 §
95% CI‡	6.2 - 22.0	2.6 - 16.4	6.6 - 17.2	3.5 - 5.3	1.7 - 2.9	2.8 - 3.8
Mortality Rate†	10.1	5.3	7.1 §	3.1 ¶	1.6 ¶	2.4 §
95% CI‡	3.1 - 17.1	0.7 - 9.9	3.2 - 11.0	2.4 - 3.8	1.1 - 2.1	2.0 - 2.8
Number of Incident Cases						
Invasive	14	8	22	110	69	179
In Situ	0	0	0	0	0	0
Uncertain	0	0	0	0	0	0
* Rates include all invasive cases.						
¶ Rates statistically significantly different between sexes within race.						
§ Rates statistically significantly different between races within sex or total.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						

The incidence rate of cancer of the liver and bile duct is more than three times greater for American Indian men in Montana than for White men. Mortality from liver cancer is almost three times greater among American Indian residents of Montana than among White residents.

Cirrhosis of the liver (chronic inflammation and fibrosis from many causes) increases the risk of liver cancer. The most common causes of cirrhosis are alcohol abuse and chronic infection with Hepatitis B or C. Hepatitis B infection is usually acquired in childhood; Hepatitis C is usually acquired in adulthood. Both infections can be asymptomatic and can become chronic. It appears that even moderate alcohol intake plus hepatitis infection may cause cirrhosis and increase the risk for liver cancer. It is estimated that one third of liver cancer is caused by infection with Hepatitis B, Hepatitis C, or a combination of the two. The National Cancer Institute recommends Hepatitis B vaccination to reduce the risk of liver cancer.[30]

[30] http://www.cancer.gov/pdq/prevention/hepatocellular/HealthProfessional/page2

LEUKEMIA

Table 13. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	8.7	14.1	11.6	16.8 ¶	9.8 ¶	12.9
95% CI‡	1.9 - 15.5	6.0 - 22.2	6.2 - 17.0	15.1 - 18.5	8.6 - 11. 0	11.9 - 13.9
Mortality Rate†	5.5	7.2	6.6	10.1 ¶	5.5 ¶	7.5
95% CI‡	0 - 11.7	1.4 - 13. 0	2.3 - 10.9	8.8 - 11.4	4.6 - 6.4	6.7 - 8.3
Number of Incident Cases						
Invasive	6	14	20	348	241	589
In Situ	0	0	0	0	0	0
Uncertain	0	0	0	0	0	0

ORAL CAVITY AND PHARYNX

Table 14. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	14.3	8.0	11.4	15.6 ¶	5.8 ¶	10.5
95% CI‡	5.2 - 23.4	2.2 - 13.8	5.9 - 16.9	14.0 - 17.2	4.9 - 6.7	9.6 - 11.4
Mortality Rate†	4.1	2.5	3.2 §	3.0 ¶	5.5 ¶	7.5 §
95% CI‡	0 - 11.7	0.3 - 4.7	0.6 - 5.8	2.3 - 3.7	4.6 - 6.4	6.7 - 8.3
Number of Incident Cases						
Invasive	13	10	23	441	187	628
In Situ	0	0	0	13	4	17
Uncertain	0	0	0	0	0	0

* Rates include all invasive cases.

¶ Rates statistically significantly different between sexes within race.

§ Rates statistically significantly different between races within sex or total.

† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.

‡ 95% Confidence Interval around the estimated rate.

BRAIN AND OTHER CENTRAL NERVOUS SYSTEM

Table 15. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	11.5	7.5	9.3	9.3 ¶	5.7 ¶	7.4
95% CI‡	3.5 - 19.5	2.1 - 12.9	4.6 - 14.0	8.0 - 10.6	4.7 - 6.7	6.6 - 8.2
Mortality Rate†	8.6	9.8	9.3	7.5 ¶	5.0 ¶	6.2
95% CI‡	2.2 - 15.0	3.4 - 16.2	4.7 - 13.9	6.4 - 8.6	4.1 - 5.9	5.5 - 6.9
Number of Incident Cases						
Invasive	12	10	22	240	164	404
In Situ	0	0	0	0	0	0
Uncertain	0	0	0	21	22	43
Benign	3	8	11	109	213	322

OVARY

Table 16. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	---	12.7	---	---	14.1	---
95% CI‡	---	5.3 - 20.1	---	---	12.6 - 15.6	---
Mortality Rate†	---	2.3 §	---	---	9.8 §	---
95% CI‡	---	0 - 4.9	---	---	8.6 - 11. 0	---
Number of Incident Cases						
Invasive	---	13	---	---	395	---
In Situ	---	0	---	---	1	---
Uncertain	---	6	---	---	22	---

* Rates include all invasive cases.
¶ Rates statistically significantly different between sexes within race.
§ Rates statistically significantly different between races within sex or total.
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.
‡ 95% Confidence Interval around the estimated rate.

THYROID

Table 17. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	2.5	9.2 §	6.0 §	4.8 ¶	17.3 ¶ §	11.1 §
95% CI‡	0 - 5.3	4.0 - 14.4	3.0 - 9.0	3.9 - 5.7	15.5 - 19.1	10.1 - 12.1
Mortality Rate†	0	0	0	0.1	0.49	0.4
95% CI‡	---	---	---	0.1 - 0.6	0.25 - 0.53	0.2 - 0.6
Number of Incident Cases						
Invasive	3	13	16	124	429	553
In Situ	0	0	0	0	0	0
Uncertain	0	0	0	0	0	0
* Rates include all invasive cases.						
¶ Rates statistically significantly different between sexes within race.						
§ Rates statistically significantly different between races within sex or total.						
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.						
‡ 95% Confidence Interval around the estimated rate.						

Thyroid cancer is relatively rare. Women are at two to three times greater risk than men for developing thyroid cancer. Thyroid cancer is more common among White populations than among Black or Asian populations. In Montana, it is more common among White women than among American Indian women.

The most well established risk factor for thyroid cancer is exposure to radiation. One source of exposure was therapeutic radiation treatments to the head and neck that were common in the 1940s through 1960s for conditions such as acne, ear aches, ringworm, tonsillitis, and asthma. However, this accounts for only a small fraction of cases of thyroid cancer.

A more common source of exposure to radiation for Montana residents was the above-ground nuclear testing that occurred in Nevada between 1952 and 1957. Montana, Idaho, and much of the Midwest were in the fallout zone from that testing. The greatest risk was to individuals who were children during the time of the above-ground testing.[31]

[31] http://rex.nci.nih.gov/massmedia/Fallout/index.html; http://www.atsdr.cdc.gov/HEC/CSEM/iodine/docs/iodine131.pdf

MELANOMA OF THE SKIN

Table 18. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	5.9 §	4.0 §	4.9 §	18.8 ¶ §	14.8 ¶ §	16.4 §
95% CI‡	0.2 - 11.6	0 - 8.3	1.4 - 8.4	17.0 - 20.6	13.2 - 16.4	15.2 - 17.6
Mortality Rate†	4.7	0.8	2.5	3.6	2.3	2.9
95% CI‡	0 - 10.0	0 - 2.4	0 - 5.0	2.8 - 4.4	1.7 - 2.9	2.4 - 3.4
Number of Incident Cases						
Invasive	7	8	15	566	465	1,031
In Situ	2	0	2	229	186	415
Uncertain	0	0	0	0	0	0

ESOPHAGUS

Table 19. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	5.9	3.0	4.3	7.5 ¶	2.0 ¶	4.6
95% CI‡	0 - 12.0	0 - 7.3	0.7 - 7.9	6.4 - 8.6	1.5 - 2.5	4.0 - 5.2
Mortality Rate†	5.7	4.6	5.3	7.5 ¶	2.2 ¶	4.7
95% CI‡	0.2 - 11.3	0 - 9.2	1.6 - 9.0	6.5 - 8.7	1.6 - 2.8	4.1 - 5.3
Number of Incident Cases						
Invasive	4	2	6	189	53	242
In Situ	1	0	1	3	1	4
Uncertain	0	0	0	0	0	0

* Rates include all invasive cases.
¶ Rates statistically significantly different between sexes within race.
§ Rates statistically significantly different between races within sex or total.
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.
‡ 95% Confidence Interval around the estimated rate.

MULTIPLE MYELOMA

Table 20. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	3.6	5.0	4.2	6.7 ¶	4.1 ¶	5.3
95% CI‡	0 - 7.8	1.0 - 9.0	1.4 - 7.0	5.6 - 7.8	3.3 - 4.9	4.6 - 6.0
Mortality Rate†	8.1	2.5	4.9	4.7 ¶	2.7 ¶	3.6
95% CI‡	1.6 - 14.6	0 - 5.4	1.7 - 8.1	3.8 - 5.6	2.1 - 3.3	3.1 - 4.4
Number of Incident Cases						
Invasive	4	2	6	149	112	261
In Situ	1	0	1	0	0	0
Uncertain	0	0	0	0	0	0

GALLBLADDER

Table 21. Incidence and Mortality Summary*						
	American Indian			White		
	Male	Female	Total	Male	Female	Total
Incidence Rate†	3.6	4.2	4.0	0.5	0.9	0.7
95% CI‡	0 - 7.9	0 - 9.3	0.6 - 7.4	0.2 - 0.8	0.5 - 1.3	0.5 - 0.9
Mortality Rate†	0.8	3.9	2.6	0.3	0.7	0.5
95% CI‡	0 - 2.4	0 - 8.3	0.1 - 5.1	0.1 - 0.5	0.4 - 1.0	0.3 - 0.7
Number of Incident Cases						
Invasive	3	3	6	14	25	39
In Situ	0	0	0	2	0	2
Uncertain	0	0	0	0	0	0

* Rates include all invasive cases.
¶ Rates statistically significantly different between sexes within race.
† Incidence and mortality rates are per 100,000 age-adjusted to the 2000 Standard Million Population.
‡ 95% Confidence Interval around the estimated rate.

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APPENDICES

I. Montana Population by Age Group and Race, 2002 - 2006

II. 2000 Standard Million Population

III. Standard Cancer Analysis Categories, ICD-0-3 Codes by Anatomical Site

IV. Ranked Cumulative Percent of Malignant Neoplasms by Site and Race, 2002 - 2006

V. Reported Malignant Neoplasms by Site, Race, and County, 2002 - 2006

APPENDIX I.

MONTANA POPULATION BY AGE GROUP AND RACE, 2002 - 2006

American Indian Population of Montana by Age Group, 2002 - 2006

Males

Age Group	2002	2003	2004	2005	2006
0-4	3,214	3,248	3,306	3,418	3,500
5-9	3,070	3,037	3,031	3,071	3,086
10-14	3,542	3,455	3,376	3,238	3,113
15-19	3,466	3,495	3,505	3,522	3,510
20-24	2,627	2,805	3,011	3,017	3,142
25-29	1,901	1,926	1,984	2,150	2,253
30-34	1,816	1,817	1,818	1,811	1,787
35-39	2,021	1,932	1,849	1,767	1,781
40-44	2,219	2,154	2,192	2,155	2,084
45-49	1,736	1,852	1,897	1,959	1,988
50-54	1,457	1,545	1,584	1,620	1,632
55-59	1,033	1,067	1,113	1,218	1,325
60-64	770	778	834	843	832
65-69	534	568	605	623	623
70-74	386	388	381	404	442
75-79	219	239	249	270	279
80-84	134	139	156	158	168
85+	65	70	78	97	95
Total	30,210	30,515	30,969	31,341	31,640

Females

Age Group	2002	2003	2004	2005	2006
0-4	3,033	3,154	3,300	3,434	3,484
5-9	2,976	2,867	2,828	2,860	2,946
10-14	3,407	3,358	3,298	3,162	3,029
15-19	3,186	3,207	3,217	3,255	3,253
20-24	2,566	2,708	2,839	3,007	3,108
25-29	1,826	1,873	1,963	1,996	2,136
30-34	2,007	1,969	1,894	1,937	1,880
35-39	2,154	2,107	2,028	1,959	1,913
40-44	2,326	2,293	2,353	2,249	2,160
45-49	1,935	2,022	2,044	2,159	2,205
50-54	1,513	1,564	1,657	1,734	1,829
55-59	1,092	1,127	1,204	1,283	1,359
60-64	861	882	914	953	966
65-69	699	717	735	734	738
70-74	444	467	508	557	578
75-79	280	306	318	330	354
80-84	198	204	200	205	216
85+	183	196	209	222	245
Total	30,686	31,021	31,509	32,036	32,399

White Population of Montana by Age Group, 2002 - 2006

Males

Age Group	2002	2003	2004	2005	2006
0-4	24,334	24,494	24,753	24,939	25,262
5-9	26,197	25,885	25,585	25,431	25,356
10-14	30,330	29,750	29,480	28,658	28,120
15-19	31,966	31,645	31,215	30,937	30,552
20-24	30,852	31,768	32,212	32,555	32,777
25-29	23,241	23,983	25,553	27,198	28,926
30-34	24,038	24,274	24,311	24,421	24,045
35-39	27,106	25,838	25,158	24,888	25,490
40-44	34,030	33,132	32,380	31,139	29,770
45-49	35,640	35,617	35,455	35,470	35,319
50-54	32,745	33,824	34,690	35,521	36,166
55-59	25,642	26,948	28,693	30,400	32,497
60-64	19,618	21,036	22,030	22,901	23,723
65-69	15,632	15,985	16,477	17,004	17,681
70-74	13,674	13,541	13,430	13,404	13,405
75-79	10,724	10,850	11,013	11,197	11,242
80-84	7,485	7,588	7,664	7,681	7,759
85+	5,323	5,540	5,774	6,123	6,350
Total	418,577	421,698	425,873	429,867	434,440

Females

Age Group	2002	2003	2004	2005	2006
0-4	22,918	23,199	23,449	23,812	24,055
5-9	24,874	24,396	24,347	24,029	24,057
10-14	28,820	28,293	27,709	26,948	26,397
15-19	29,581	29,217	28,888	28,789	28,610
20-24	27,787	28,527	28,810	28,843	29,113
25-29	21,732	22,375	23,707	25,183	26,324
30-34	23,471	23,466	23,127	22,850	22,717
35-39	27,661	26,201	25,317	25,083	25,295
40-44	34,746	34,063	33,369	31,839	30,421
45-49	35,848	36,221	36,200	36,200	36,330
50-54	31,232	32,572	33,843	34,975	35,808
55-59	24,611	25,588	27,277	29,071	31,131
60-64	19,414	20,614	21,507	22,320	22,994
65-69	16,194	16,560	17,061	17,424	18,004
70-74	15,353	15,166	14,865	14,730	14,824
75-79	13,357	13,440	13,482	13,694	13,687
80-84	11,132	11,117	11,185	10,996	10,974
85+	11,012	11,334	11,631	12,066	12,227
Total	419,743	422,349	425,774	428,852	432,968

APPENDIX II.

2000 Standard Million Population by Five-Year Age Strata

Age Stratum	Population
0-4	69,135
5-9	72,533
10-14	73,032
15-19	72,169
20-24	66,478
25-29	64,529
30-34	71,044
35-39	80,762
40-44	81,851
45-49	72,118
50-54	62,716
55-59	48,454
60-64	38,793
65-69	34,264
70-74	31,773
75-79	26,999
80-84	17,842
85+	15,508
Total	1,000,000

Source: SEER Program, National Cancer Institute, 2003

Appendix III.
Standard Analysis Categories
ICD-O-3 Codes by Anatomical Site

Site Group	ICD-O-3 Site Codes	ICD-O-3 Histology (Type)
Oral Cavity and Pharynx		
Lip	C000-C009	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Tongue	C019-C029	
Salivary Gland	C079-C089	
Floor of Mouth	C040-C049	
Gum and Other Mouth	C030-C039, C050-C059, C060-C069	
Nasopharynx	C110-C119	
Tonsil	C090-C099	
Oropharynx	C100-C109	
Hypopharynx	C129, C130-C139	
Other Oral Cavity and Pharynx	C140, C142-C148	
Digestive System		
Esophagus	C150-C159	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Stomach	C160-C169	
Small Intestine	C170-C179	
Colon	C180-C189, C260	
Rectum & Rectosigmoid	C199-C209	
Anus, Anal Canal, and Anorectum	C210-C212, C218	
Liver	C220	
Intrahepatic Bile Duct	C221	
Gallbladder	C239	
Other Biliary	C240-C249	
Pancreas	C250-C259	
Retroperitoneum	C480	
Peritoneum, Omentum, and Mesentery	C481-C482	
Other Digestive Organs	C268-C269, C488	
Respiratory System		
Nose, Nasal Cavity, and Middle Ear	C300-C301, C310-C319	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Larynx	C320-C329	
Lung and Bronchus	C340-C349	
Pleura	C384	
Trachea, Mediastinum, and Other Respiratory Organs	C339, C381-C383, C388, C390, C398, C399	

Site Group	ICD-O-3 Site Codes	ICD-O-3 Histology (Type)
Bones and Joints	C400-C419	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Soft Tissue Including Heart	C380, C470-C479, C490-C499	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Skin Excluding Basal and Squamous		
Melanoma of the Skin	C440-C449	8720-8790
Other Non-Epithelial Skin	C440-C449	Excluding 8000-8005, 8010-8045, 8050-8084, 8090-8110, 8720-8790, 9590-9989, and sometimes 9050-9055, 9140+
Breast	C500-C509	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Female Genital System		
Cervix Uteri	C530-C539	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Corpus Uteri and Uterus	C540-C549, C559	
Ovary	C569	
Vagina	C529	
Vulva	C510-C519	
Other Female Genital Organs	C570-C589	
Male Genital System		
Prostate	C619	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Testis	C620-C629	
Penis	C600-C609	
Other Male Genital Organs	C630-C639	
Urinary System		
Urinary Bladder	C670-C679	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Kidney and Renal Pelvis	C649, C659	
Ureter	C669	
Other Urinary Organs	C680-C689	
Eye and Orbit	C679-C699	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Brain and Other Nervous System		
Brain	C710-C719	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Cranial Nerves and Other Nervous System	C710-C719	9530-9539
	C700-C709, C720-C729	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Endocrine System		
Thyroid	C739	Excluding 9590-9989, and sometimes 9050-9055, 9140+
Other Endocrine Including Thymus	C379, C740-C749, C750-C759	

Site Group	ICD-O-3 Site Codes	ICD-O-3 Histology (Type)
Lymphoma		
Hodgkin Lymphoma		
Hodgkin – Nodal	C024, C098-C099, C111, C142, C379, C422, C770-C779	9650-9667
Hodgkin – Extranodal	All Other Sites	
Non-Hodgkin Lymphoma		
NHL – Nodal	C024, C098-C099, C111, C142, C379, C422, C770-C779	9590-9596, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9714-9719, 9727-9729, 9823, 9827
NHL – Extranodal	All sites except C024, C098-C099, C111, C142, C379, C422, C770-C779	9590-9596, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9714-9719, 9727-9729
	All sites except C024, C098-C099, C111, C142, C379, C422, C770-C779	9823, 9827
Myeloma		9731-9732, 9734
Leukemia		
Lymphocytic Leukemia		
Acute Lymphocytic Leukemia		9826, 9835-9837
Chronic Lymphocytic Leukemia	C420, C421, C424	9823
Other Lymphocytic Leukemia		9820, 9832-9834, 9940
Myeloid and Monocytic Leukemia		
Acute Myeloid Leukemia		9840, 9861, 9866, 9867, 9871-9874, 9895-9897, 9910, 9920
Acute Monocytic Leukemia		9891
Chronic Myeloid Leukemia		9863, 9875, 9876, 9945, 9946
Other Myeloid/Monocytic Leukemia		9860, 9930
Other Leukemia		
Other Acute Leukemia		9801, 9805, 9931
Aleukemic, Subleukemic, and NOS		9733, 9742, 9800, 9831, 9870, 9948, 9963, 9964
	C420, C421, C424	9827
Mesothelioma		9050-9055
Kaposi Sarcoma		9140
Miscellaneous		9740-9741, 9750-9758, 9760-9769, 9950, 9960-9962, 9970, 9975, 9980, 9982-9987, 9989
	C760-C768, C809	Excluding 9590-9989, and sometimes 9050-9055, 9140+
	C420-C424	
	C770-C779	

APPENDIX IV.
Ranked Cumulative Percent of Invasive Cancers by Anatomical Site and Race
Montana Central Tumor Registry 2002 - 2006

	American Indian				White			
Rank	Anatomical Site	Number	Percent	Cumulative	Rank	Anatomical Site	Number	Percent	Cumulative
1	Lung and bronchus	159	20.1	20.1	1	Prostate	4,011	17.5	17.5
2	Breast (female)	120	12.2	32.3	2	Lung and bronchus	3,135	13.9	31.4
3	Prostate	95	11.2	43.5	3	Breast (female)	3,038	13.6	45.0
4	Colon and rectum	95	11.2	54.7	4	Colon and rectum	2,237	9.9	54.9
5	Non-Hodgkin lymphoma	33	4.4	59.1	5	Urinary bladder	1,147	5.0	59.9
6	Kidney and renal pelvis	37	3.6	62.7	6	Non-Hodgkin lymphoma	883	3.9	63.8
7	Urinary bladder	26	3.6	66.3	7	Melanoma of the skin	772	3.6	67.4
8	Pancreas	25	3.0	69.3	8	Leukemia	622	2.8	70.2
9	Stomach	26	2.7	72.0	9	Uterus	590	2.6	72.8
10	Uterus	25	2.6	74.6	10	Kidney and renal pelvis	587	2.6	75.4
11	Liver and bile duct	22	2.4	77.0	11	Thyroid	496	2.5	77.9
12	Leukemia	22	2.3	79.3	12	Pancreas	528	2.3	80.2
13	Oral cavity and pharynx	20	2.3	81.6	13	Oral cavity and pharynx	521	2.3	82.5
14	Brain, central nervous system	20	1.9	83.5	14	Ovary	372	1.6	84.1
15	Ovary	13	1.4	84.9	15	Brain, central nervous system	350	1.6	85.7
16	Thyroid	15	1.2	86.1	16	Stomach	287	1.3	87.0
17	Melanoma of the skin	9	1.0	87.1	17	Multiple myeloma	261	1.2	88.2
18	Esophagus	6	0.9	88.0	18	Esophagus	231	1.0	89.2
19	Multiple myeloma	9	0.8	88.8	19	Liver and bile duct	167	0.7	89.9
20	Gall bladder	6	0.8	89.6	20	Larynx	156	0.7	90.6
21	Cervix	9	0.7	90.3	21	Cervix	134	0.7	91.3
22	Larynx	5	0.6	90.9	22	Testis	131	0.7	92.0
23	Soft tissues	5	0.5	91.4	23	Soft tissues	125	0.6	92.6
24	Trachea and pleura	< 5	0.4	91.8	24	Hodgkin lymphoma	106	0.6	93.2
25	Other biliary	< 5	0.4	92.2	25	Small intestine	70	0.3	93.5
26	Vulva	< 5	0.3	92.5	26	Other biliary	68	0.3	93.8
27	Anus and anorectum	< 5	0.2	92.7	27	Anus and anoreectum	58	0.3	94.1
28	Peritoneum	< 5	0.2	92.9	28	Vulva	55	0.2	94.3
29	Nasal cavity, sinuses, ear	< 5	0.2	93.1	29	Other skin	49	0.2	94.5
30	Bones and joints	< 5	0.2	93.3	30	Eye	44	0.2	94.7
31	Vagina	< 5	0.2	93.5	31	Bones and joints	43	0.2	94.9

32	Testis	< 5	0.2	93.7	32	Other endocrine	40	0.2	95.1
33	Penis	< 5	0.2	93.9	33	Gall bladder	37	0.2	95.3
34	Other urinary	< 5	0.2	94.1	34	Peritoneum	33	0.2	95.5
35	Hodgkin lymphoma	< 5	0.2	94.3	35	Nasal cavity, sinuses, ear	28	0.1	95.6
36	Small intestine	< 5	0.1	94.4	36	Ureter	21	0.1	95.7
37	Other skin	< 5	0.1	94.5	37	Retroperitoneum	18	0.1	95.8
38	Retroperitoneum	< 5	0.1	94.6	38	Other female genital organs	18	0.1	95.9
39	Other female genital organs	< 5	0.1	94.7	39	Penis	12	0.1	96.0
40	Other male genital organs	< 5	0.1	94.8	40	Vagina	11	0.1	96.1
41	Ureter	< 5	0.1	94.9	41	Other digestive organs	10	0.1	96.2
					42	Trachea and pleura	6	0.1	96.3
					43	Other urinary	< 5	0.1	96.4
	Total excluding unkonwn			94.9		Total excluding unknown			96.4
	Unknown and ill-defined			5.1		Unknown and ill-defined			3.6
	TOTAL			100.0		TOTAL			100.0

APPENDIX V

Reported Malignant Neoplasms by Anatomical Site, Race and County
Montana Residents, 2002-2006 Diagnoses

	All Cancers			Bladder*			Brain & CNS		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	22,456	884	539	1,147	26	25	353	20	2
Beaverhead	184	-	10	11	-	1	3	-	-
Big Horn	135	85	4	14	4	-	4	-	-
Blaine	110	35	-	7	3	-	2	1	-
Broadwater	145	3	1	12	-	-	2	-	-
Carbon	288	-	8	12	-	-	1	-	-
Carter	30	-	1	1	-	-	-	-	-
Cascade	1,993	54	39	103	2	1	31	1	-
Chouteau	168	2	2	5	-	-	2	-	-
Custer	393	4	12	19	-	-	7	-	-
Daniels	60	-	-	-	-	-	2	-	-
Dawson	307	2	2	16	-	-	2	-	-
Deer Lodge	264	3	10	14	-	-	7	1	-
Fallon	77	-	1	6	-	-	1	-	-
Fergus	457	4	4	21	-	-	9	-	-
Flathead	2,210	20	25	116	-	-	35	2	1
Gallatin	1,144	6	119	56	-	6	20	-	-
Garfield	40	-	-	2	-	-	1	-	-
Glacier	118	128	4	2	2	-	2	5	-
Golden Valley	35	1	1	4	-	-	-	-	-
Granite	79	-	3	3	-	-	2	-	-
Hill	357	54	4	15	2	-	7	3	-
Jefferson	212	1	8	9	-	-	2	-	-
Judith Basin	75	-	1	2	-	-	-	-	-
Lake	569	117	7	30	3	-	12	2	-
Lewis & Clark	1,364	30	19	65	1	-	25	-	-
Liberty	82	-	-	1	-	-	1	-	-
Lincoln	583	2	15	44	-	1	5	-	-
McCone	53	-	-	4	-	-	1	-	-
Madison	156	-	7	9	-	-	-	-	-
Meagher	70	1	3	5	-	-	4	-	-
Mineral	122	2	-	12	-	-	3	-	-
Missoula	2,021	35	13	103	2	2	24	-	-
Musselshell	149	-	1	5	-	-	2	-	-
Park	398	2	16	17	-	2	4	-	-
Petroleum	9	-	-	-	-	-	-	-	-
Phillips	128	15	-	7	1	-	-	-	-
Pondera	168	25	1	7	2	-	6	-	-
Powder River	40	-	1	2	-	-	3	-	-
Powell	161	4	3	7	-	-	2	-	-
Prairie	58	1	3	4	-	-	-	-	-
Ravalli	1,034	6	10	64	-	-	20	-	-
Richland	191	-	3	4	-	-	5	-	-
Roosevelt	147	83	5	5	1	-	3	2	-
Rosebud	165	45	2	7	-	-	2	-	-
Sanders	357	10	7	16	-	-	6	1	-
Sheridan	112	4	2	4	-	-	3	-	-
Silver Bow	715	10	29	39	-	2	10	-	-
Stillwater	241	2	3	6	1	-	2	-	-
Sweet Grass	84	-	3	4	-	-	2	-	-
Teton	169	-	1	7	-	-	2	-	-
Toole	137	3	3	10	-	-	4	-	-
Treasure	33	1	1	2	-	-	-	-	-
Valley	246	18	1	9	-	1	2	1	-
Wheatland	64	-	4	2	-	-	1	-	-
Wibaux	33	-	-	2	-	-	-	-	-
Yellowstone	3,711	66	116	193	2	9	57	1	1
Unknown County	5	-	1	1	-	-	-	-	-

Montana Residents, 2002-2006 Diagnoses

	Breast			Cervix			Colon & Rectum		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	3,055	120	59	134	9	5	2,238	97	39
Beaverhead	31	-	1	-	-	-	17	-	-
Big Horn	16	13	-	2	1	-	14	7	1
Blaine	12	3	-	1	-	-	10	4	-
Broadwater	24	-	-	1	-	-	16	-	-
Carbon	36	-	-	2	-	-	31	-	-
Carter	5	-	-	1	-	-	10	-	-
Cascade	270	8	5	15	1	2	187	3	-
Chouteau	23	1	1	-	-	-	25	-	-
Custer	57	1	-	3	-	-	51	-	-
Daniels	8	-	-	2	-	-	11	-	-
Dawson	40	-	1	-	-	-	35	-	-
Deer Lodge	24	-	2	1	-	1	31	-	-
Fallon	4	-	-	-	-	-	8	-	-
Fergus	56	-	1	1	-	-	49	-	-
Flathead	332	4	4	16	-	-	210	-	4
Gallatin	204	2	21	4	-	1	81	-	8
Garfield	3	-	-	-	-	-	5	-	-
Glacier	26	21	2	-	-	-	17	13	-
Golden Valley	4	-	-	-	-	-	3	-	-
Granite	9	-	-	1	-	-	4	-	1
Hill	48	5	-	2	1	-	37	6	1
Jefferson	26	-	2	2	-	-	20	-	1
Judith Basin	4	-	-	-	-	-	7	-	-
Lake	78	15	-	3	-	-	64	17	-
Lewis & Clark	207	1	1	10	-	-	130	4	1
Liberty	9	-	-	-	-	-	12	-	-
Lincoln	78	-	1	3	-	-	56	-	1
McCone	11	-	-	-	-	-	14	-	-
Madison	13	-	2	1	-	-	19	-	-
Meagher	7	1	-	-	-	-	5	-	-
Mineral	10	1	-	1	-	-	12	-	-
Missoula	305	4	-	10	1	-	183	2	1
Musselshell	12	-	-	2	-	-	16	-	-
Park	59	-	1	4	-	-	35	1	1
Petroleum	1	-	-	-	-	-	2	-	-
Phillips	14	1	-	-	-	-	16	3	-
Pondera	19	3	-	4	1	-	9	1	-
Powder River	4	-	-	-	-	-	2	-	-
Powell	18	1	1	1	-	-	10	1	-
Prairie	6	-	-	-	-	-	11	-	2
Ravalli	129	1	-	4	-	-	83	-	3
Richland	31	-	-	1	-	-	29	-	-
Roosevelt	30	14	-	-	2	-	10	15	1
Rosebud	15	4	-	-	1	-	36	6	-
Sanders	41	-	-	1	-	-	33	3	1
Sheridan	15	1	-	-	-	-	13	1	1
Silver Bow	87	1	4	1	-	-	80	2	4
Stillwater	38	-	-	3	-	-	24	-	-
Sweet Grass	12	-	-	-	-	-	4	-	-
Teton	24	-	-	5	-	-	20	-	-
Toole	13	1	1	-	-	-	17	-	-
Treasure	5	-	-	-	-	-	5	-	-
Valley	30	3	-	1	1	-	24	1	-
Wheatland	6	-	-	2	-	-	8	-	-
Wibaux	1	-	-	1	-	-	8	-	-
Yellowstone	465	10	8	22	-	1	369	7	7
Unknown County	-	-	-	-	-	-	-	-	-

Reported Malignant Neoplasms by Anatomical Site, Race and County
Montana Residents, 2002-2006 Diagnoses

	Esophagus			Hodgkin Lymphoma			Kidney & Renal Pelvis		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	232	6	4	106	4	3	587	38	8
Beaverhead	3	-	-	-	-	-	5	-	-
Big Horn	-	-	-	-	-	-	4	6	-
Blaine	2	-	-	-	-	-	-	3	-
Broadwater	1	-	-	-	-	-	3	-	-
Carbon	2	-	-	1	-	-	6	-	-
Carter	-	-	-	-	-	-	-	-	-
Cascade	23	-	-	7	-	-	54	1	1
Chouteau	3	-	-	-	-	-	6	-	-
Custer	6	-	-	3	-	-	6	-	-
Daniels	-	-	-	-	-	-	1	-	-
Dawson	2	-	-	-	-	-	6	-	-
Deer Lodge	2	-	-	1	-	-	11	-	1
Fallon	-	-	-	1	-	-	3	-	-
Fergus	4	-	-	1	-	-	12	-	-
Flathead	23	-	-	11	-	-	61	-	2
Gallatin	17	-	1	9	1	-	25	-	3
Garfield	2	-	-	-	-	-	3	-	-
Glacier	1	4	-	1	-	-	2	4	-
Golden Valley	-	-	-	-	-	-	1	-	-
Granite	3	-	-	-	-	-	-	-	-
Hill	2	-	-	2	-	-	18	4	-
Jefferson	2	-	-	1	-	-	3	-	-
Judith Basin	1	-	-	-	-	-	3	-	-
Lake	7	1	-	-	1	-	14	6	1
Lewis & Clark	15	-	-	6	-	-	32	1	-
Liberty	-	-	-	-	-	-	-	-	-
Lincoln	4	-	2	1	-	-	16	-	-
McCone	-	-	-	-	-	-	1	-	-
Madison	-	-	-	-	-	-	9	-	-
Meagher	-	-	-	1	-	-	2	-	-
Mineral	4	-	-	-	-	-	5	-	-
Missoula	14	-	-	13	-	-	59	1	-
Musselshell	2	-	-	1	-	-	3	-	-
Park	2	-	-	4	-	-	18	-	-
Petroleum	-	-	-	-	-	-	-	-	-
Phillips	1	-	-	-	-	-	-	-	-
Pondera	6	-	-	2	-	-	4	2	-
Powder River	-	-	-	-	-	-	-	-	-
Powell	3	-	-	1	-	-	5	-	-
Prairie	1	-	-	-	-	-	1	-	-
Ravalli	8	1	-	5	-	-	23	-	-
Richland	1	-	-	3	-	-	2	-	-
Roosevelt	-	-	-	-	-	-	7	4	-
Rosebud	-	-	-	1	-	-	3	3	-
Sanders	5	-	-	4	-	-	8	-	-
Sheridan	2	-	-	-	-	-	5	-	-
Silver Bow	8	-	1	3	-	1	17	2	-
Stillwater	2	-	-	2	-	1	4	-	-
Sweet Grass	1	-	-	-	-	-	2	-	-
Teton	3	-	-	1	-	-	2	-	-
Toole	2	-	-	2	-	-	3	-	-
Treasure	1	-	-	-	-	-	-	-	-
Valley	2	-	-	1	-	-	14	-	-
Wheatland	1	-	-	-	-	-	3	-	-
Wibaux	-	-	-	1	-	-	2	-	-
Yellowstone	38	-	-	16	2	1	90	1	-
Unknown County	-	-	-	-	-	-	-	-	-

Reported Malignant Neoplasms by Anatomical Site, Race and County
Montana Residents, 2002-2006 Diagnoses

	Larynx			Leukemia			Lung		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	156	5	3	624	22	23	3,142	159	25
Beaverhead	-	-	-	4	-	1	28	-	-
Big Horn	-	1	-	5	1	1	14	17	-
Blaine	1	-	-	2	1	-	15	4	-
Broadwater	3	-	-	6	-	-	28	2	-
Carbon	2	-	-	14	-	-	33	-	1
Carter	-	-	-	-	-	-	2	-	-
Cascade	14	-	-	30	-	-	312	13	5
Chouteau	-	-	-	5	-	-	27	-	-
Custer	2	-	-	10	-	2	61	2	-
Daniels	-	-	-	1	-	-	14	-	-
Dawson	-	-	-	8	-	-	49	1	-
Deer Lodge	2	-	-	5	-	-	40	1	-
Fallon	-	-	-	3	-	-	13	-	-
Fergus	4	-	-	7	1	-	50	1	-
Flathead	9	-	-	48	-	2	272	5	1
Gallatin	12	-	1	25	-	4	127	-	2
Garfield	-	-	-	1	-	-	5	-	-
Glacier	-	1	-	6	3	-	16	22	-
Golden Valley	-	-	-	1	-	-	8	1	-
Granite	4	-	-	3	-	-	10	-	-
Hill	5	-	-	15	-	1	52	10	-
Jefferson	3	-	-	8	-	-	32	-	-
Judith Basin	1	-	-	7	-	-	13	-	-
Lake	4	2	-	16	5	-	80	19	-
Lewis & Clark	13	-	-	37	-	1	199	8	1
Liberty	-	-	-	4	-	-	9	-	-
Lincoln	3	-	-	11	-	-	106	1	-
McCone	-	-	-	1	-	-	2	-	-
Madison	1	-	-	2	-	-	22	-	2
Meagher	-	-	-	1	-	-	12	-	-
Mineral	1	-	-	2	-	-	27	-	-
Missoula	12	-	-	66	2	-	262	8	1
Musselshell	2	-	-	4	-	-	33	-	-
Park	5	-	1	8	-	1	51	-	2
Petroleum	-	-	-	1	-	-	1	-	-
Phillips	1	-	-	8	-	-	25	5	-
Pondera	-	-	-	4	1	-	23	4	-
Powder River	-	-	-	-	-	-	6	-	-
Powell	1	-	-	7	-	-	33	2	-
Prairie	-	-	-	2	-	-	7	-	-
Ravalli	4	-	1	34	1	1	134	1	-
Richland	2	-	-	10	-	-	39	-	1
Roosevelt	2	-	-	3	2	1	22	5	-
Rosebud	2	-	-	2	2	-	21	5	-
Sanders	3	-	-	13	-	-	44	4	2
Sheridan	1	-	-	4	1	-	18	-	-
Silver Bow	6	-	-	23	-	-	125	2	-
Stillwater	2	-	-	2	-	-	29	1	-
Sweet Grass	1	-	-	4	-	-	7	-	-
Teton	1	-	-	5	-	-	22	-	-
Toole	1	-	-	6	-	-	17	-	-
Treasure	-	-	-	-	-	-	8	1	-
Valley	1	1	-	12	-	-	23	5	-
Wheatland	1	-	-	3	-	-	6	-	-
Wibaux	-	-	-	1	-	-	-	-	-
Yellowstone	24	-	-	114	2	8	508	9	7
Unknown County	-	-	-	-	-	-	-	-	-

Reported Malignant Neoplasms by Anatomical Site, Race and County
Montana Residents, 2002-2006 Diagnoses

	Melanoma of Skin			Multiple Myeloma			Non-Hodgkin Lymphoma		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	776	9	50	261	9	1	886	33	32
Beaverhead	9	-	2	2	-	-	8	-	2
Big Horn	2	-	-	-	1	-	8	2	-
Blaine	2	-	-	1	-	-	7	2	-
Broadwater	2	-	-	1	-	-	4	-	-
Carbon	19	-	-	5	-	-	14	-	-
Carter	-	-	-	-	-	-	-	-	-
Cascade	52	1	1	24	-	-	76	4	3
Chouteau	3	1	-	1	-	-	6	-	-
Custer	8	-	-	4	-	-	13	-	-
Daniels	3	-	-	1	-	-	4	-	-
Dawson	15	-	-	4	-	-	13	-	-
Deer Lodge	6	-	2	3	-	-	14	-	1
Fallon	2	-	-	1	-	-	-	-	-
Fergus	15	-	-	9	-	-	23	-	3
Flathead	86	-	-	20	1	-	74	2	3
Gallatin	43	-	21	13	-	-	44	-	6
Garfield	-	-	-	-	-	-	2	-	-
Glacier	2	-	-	-	3	-	5	5	-
Golden Valley	1	-	-	1	-	-	-	-	-
Granite	5	-	-	2	-	-	2	-	-
Hill	6	-	-	3	-	-	7	-	-
Jefferson	1	-	-	4	-	-	9	-	-
Judith Basin	1	-	-	-	-	-	1	-	-
Lake	18	2	1	6	-	-	32	6	-
Lewis & Clark	36	1	1	19	-	-	67	3	1
Liberty	3	-	-	3	-	-	2	-	-
Lincoln	8	-	-	7	-	-	24	-	-
McCone	-	-	-	-	-	-	2	-	-
Madison	5	-	-	3	-	-	2	-	-
Meagher	-	-	-	2	-	-	3	-	-
Mineral	2	-	-	-	1	-	2	-	-
Missoula	106	-	2	19	-	-	68	1	1
Musselshell	3	-	-	3	-	-	4	-	-
Park	8	-	2	8	-	-	14	-	1
Petroleum	-	-	-	-	-	-	-	-	-
Phillips	3	-	-	1	1	-	6	-	-
Pondera	5	-	-	3	-	-	10	-	-
Powder River	2	-	-	-	-	-	-	-	-
Powell	5	-	-	-	-	-	6	-	-
Prairie	1	-	-	2	-	-	2	-	-
Ravalli	50	-	-	12	-	-	44	-	-
Richland	4	-	-	6	-	-	10	-	-
Roosevelt	7	-	1	2	1	-	10	4	-
Rosebud	4	1	1	2	1	-	10	2	-
Sanders	14	-	-	5	-	-	18	-	-
Sheridan	2	-	-	3	-	-	6	-	-
Silver Bow	30	-	2	3	-	1	14	-	2
Stillwater	9	-	1	-	-	-	11	-	-
Sweet Grass	4	-	-	1	-	-	5	-	-
Teton	2	-	-	1	-	-	2	-	-
Toole	3	-	1	-	-	-	8	-	-
Treasure	-	-	-	-	-	-	1	-	-
Valley	4	1	-	4	-	-	11	2	-
Wheatland	1	-	1	1	-	-	3	-	-
Wibaux	1	-	-	-	-	-	2	-	-
Yellowstone	153	2	11	46	-	-	152	-	9
Unknown County	-	-	-	-	-	-	1	-	-

Reported Malignant Neoplasms by Anatomical Site, Race and County
Montana Residents, 2002-2006 Diagnoses

	Oral Cavity & Pharynx			Ovary			Pancreas		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	522	20	4	372	13	3	530	25	4
Beaverhead	5	-	-	2	-	-	7	-	-
Big Horn	5	1	-	2	1	-	2	-	-
Blaine	1	1	-	2	1	-	3	1	-
Broadwater	3	-	-	3	-	-	2	1	-
Carbon	9	-	-	6	-	-	7	-	-
Carter	-	-	-	-	-	-	-	-	-
Cascade	39	5	1	29	2	2	36	-	-
Chouteau	1	-	-	6	-	-	1	-	-
Custer	14	-	1	2	-	-	12	-	-
Daniels	-	-	-	1	-	-	1	-	-
Dawson	6	-	-	4	-	-	5	-	-
Deer Lodge	4	-	-	2	-	-	2	-	-
Fallon	1	-	-	1	-	-	-	-	-
Fergus	11	-	-	11	-	-	8	-	-
Flathead	33	-	-	30	-	-	61	1	1
Gallatin	25	-	1	21	1	-	26	-	1
Garfield	3	-	-	1	-	-	3	-	-
Glacier	4	2	-	-	-	-	1	4	-
Golden Valley	3	-	-	-	-	-	-	-	-
Granite	4	-	-	4	-	-	2	-	-
Hill	6	1	-	7	-	-	10	1	-
Jefferson	5	-	-	8	-	-	5	-	-
Judith Basin	1	-	-	-	-	-	2	-	-
Lake	15	2	-	14	1	-	8	7	-
Lewis & Clark	32	1	-	14	1	-	33	1	-
Liberty	3	-	-	-	-	-	-	-	-
Lincoln	13	-	-	10	-	-	11	-	-
McCone	-	-	-	-	-	-	3	-	-
Madison	2	-	-	6	-	-	3	-	-
Meagher	-	-	-	1	-	-	3	-	-
Mineral	2	-	-	3	-	-	5	-	-
Missoula	47	1	1	41	2	1	53	1	-
Musselshell	4	-	-	1	-	-	3	-	-
Park	14	-	-	9	-	-	9	-	-
Petroleum	-	-	-	-	-	-	2	-	-
Phillips	2	-	-	2	-	-	1	-	-
Pondera	5	-	-	2	-	-	1	1	-
Powder River	-	-	-	-	-	-	3	-	-
Powell	4	-	-	1	-	-	5	-	-
Prairie	1	-	-	1	-	-	3	-	-
Ravalli	18	-	-	17	-	-	25	-	-
Richland	2	-	-	2	-	-	7	-	-
Roosevelt	2	4	-	3	2	-	1	2	-
Rosebud	6	1	-	2	2	-	2	2	-
Sanders	13	-	-	7	-	-	11	-	-
Sheridan	2	-	-	5	-	-	5	-	-
Silver Bow	19	-	-	14	-	-	22	1	-
Stillwater	5	-	-	3	-	-	7	-	-
Sweet Grass	5	-	-	-	-	-	1	-	-
Teton	4	-	-	4	-	-	1	-	-
Toole	3	-	-	-	-	-	3	1	-
Treasure	1	-	-	1	-	-	-	-	-
Valley	5	-	-	4	-	-	6	1	-
Wheatland	2	-	-	2	-	-	2	-	-
Wibaux	1	-	-	1	-	-	1	-	-
Yellowstone	107	1	-	60	-	-	94	-	2
Unknown County	-	-	-	-	-	-	-	-	-

Reported Malignant Neoplasms by Anatomical Site, Race and County
Montana Residents, 2002-2006 Diagnoses

	Prostate			Stomach			Testis		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	4,020	95	164	287	26	4	131	3	4
Beaverhead	18	-	1	-	-	1	2	-	-
Big Horn	24	4	2	1	1	-	-	1	-
Blaine	25	7	-	2	1	-	1	-	-
Broadwater	20	-	1	-	-	-	-	-	-
Carbon	47	-	5	2	-	-	1	-	-
Carter	8	-	-	-	-	-	-	-	-
Cascade	395	4	14	39	-	1	10	-	-
Chouteau	34	-	1	2	-	-	1	-	-
Custer	51	-	4	4	-	-	1	-	-
Daniels	4	-	-	2	-	-	-	-	-
Dawson	55	-	1	1	-	-	2	-	-
Deer Lodge	55	-	3	2	1	-	1	-	-
Fallon	16	-	1	-	-	-	-	-	-
Fergus	108	2	-	5	-	-	3	-	-
Flathead	463	-	3	31	1	-	12	-	1
Gallatin	181	-	18	13	-	1	17	-	3
Garfield	5	-	-	-	-	-	-	-	-
Glacier	10	17	2	2	5	-	-	-	-
Golden Valley	5	-	1	-	-	-	-	-	-
Granite	14	-	2	1	-	-	-	-	-
Hill	73	6	2	4	1	-	2	1	-
Jefferson	36	1	3	5	-	-	3	-	-
Judith Basin	20	-	1	1	-	-	-	-	-
Lake	95	17	2	8	2	-	1	-	-
Lewis & Clark	198	3	10	18	2	-	5	-	-
Liberty	16	-	-	2	-	-	-	-	-
Lincoln	105	-	7	8	-	-	-	-	-
McCone	10	-	-	1	-	-	-	-	-
Madison	29	-	1	3	-	-	2	-	-
Meagher	16	-	3	-	-	-	-	-	-
Mineral	16	-	-	-	-	-	-	-	-
Missoula	368	3	1	26	1	1	16	1	-
Musselshell	24	-	1	2	-	-	1	-	-
Park	69	1	5	6	-	-	-	-	-
Petroleum	1	-	-	-	-	-	-	-	-
Phillips	21	2	-	1	-	-	2	-	-
Pondera	33	5	-	-	1	-	1	-	-
Powder River	8	-	1	2	-	-	-	-	-
Powell	27	-	1	4	-	-	2	-	-
Prairie	9	-	1	2	1	-	-	-	-
Ravalli	200	1	3	13	-	-	11	-	-
Richland	21	-	-	1	-	-	1	-	-
Roosevelt	20	4	1	1	4	-	-	-	-
Rosebud	27	6	-	4	2	-	-	-	-
Sanders	68	1	2	8	-	-	2	-	-
Sheridan	11	1	-	1	-	-	1	-	-
Silver Bow	111	1	8	8	-	-	1	-	-
Stillwater	57	-	-	2	-	-	2	-	-
Sweet Grass	18	-	3	2	-	-	-	-	-
Teton	43	-	1	1	-	-	1	-	-
Toole	24	-	1	2	-	-	-	-	-
Treasure	7	-	1	-	-	-	-	-	-
Valley	34	-	-	4	2	-	3	-	-
Wheatland	15	-	3	1	-	-	-	-	-
Wibaux	7	-	-	-	-	-	-	-	-
Yellowstone	644	9	42	39	1	-	23	-	-
Unknown County	1	-	1	-	-	-	-	-	-

Reported Malignant Neoplasms by Anatomical Site, Race and County
Montana Residents, 2002-2006 Diagnoses

	Thyroid			Uterus		
County of Residence	**White**	**Native Am**	**Other/Unk**	**White**	**Native Am**	**Other/Unk**
Montana	496	15	7	590	25	14
Beaverhead	6	-	-	7	-	-
Big Horn	2	-	-	1	3	-
Blaine	3	-	-	2	-	-
Broadwater	2	-	-	1	-	-
Carbon	6	-	-	8	-	-
Carter	2	-	-	-	-	-
Cascade	38	2	1	64	1	-
Chouteau	-	-	-	5	-	-
Custer	10	-	-	12	-	1
Daniels	1	-	-	1	-	-
Dawson	6	-	-	7	-	-
Deer Lodge	7	-	-	2	-	-
Fallon	-	-	-	5	-	-
Fergus	6	-	-	14	-	-
Flathead	53	1	-	61	1	-
Gallatin	29	1	2	39	1	5
Garfield	1	-	-	-	-	-
Glacier	2	-	-	10	2	-
Golden Valley	3	-	-	-	-	-
Granite	1	-	-	-	-	-
Hill	4	1	-	9	2	-
Jefferson	4	-	-	6	-	-
Judith Basin	1	-	-	3	-	-
Lake	8	2	1	17	2	2
Lewis & Clark	20	1	1	45	-	-
Liberty	3	-	-	6	-	-
Lincoln	11	1	-	14	-	1
McCone	1	-	-	1	-	-
Madison	5	-	-	2	-	2
Meagher	-	-	-	1	-	-
Mineral	3	-	-	4	-	-
Missoula	56	-	-	45	1	-
Musselshell	5	-	-	5	-	-
Park	8	-	-	7	-	-
Petroleum	-	-	-	-	-	-
Phillips	6	-	-	-	1	-
Pondera	2	-	-	4	-	-
Powder River	1	-	-	-	-	-
Powell	1	-	-	2	-	-
Prairie	-	-	-	2	-	-
Ravalli	22	-	-	19	-	1
Richland	-	-	-	2	-	1
Roosevelt	4	1	-	3	2	-
Rosebud	4	-	1	-	2	-
Sanders	-	-	-	9	-	-
Sheridan	-	-	-	3	-	-
Silver Bow	11	-	-	17	-	-
Stillwater	5	-	-	7	-	1
Sweet Grass	2	-	-	2	-	-
Teton	5	-	-	4	-	-
Toole	1	1	-	7	-	-
Treasure	1	-	-	1	-	-
Valley	7	-	-	12	-	-
Wheatland	3	-	-	1	-	-
Wibaux	1	-	-	1	-	-
Yellowstone	112	4	1	90	7	-
Unknown County	1	-	-	-	-	-

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MONTANA
Department of Public Health & Human Services